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Volume XII. APRIL, 1928 No. 4

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THE MEDICAL AND SURGICAL ASSOCIATION
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FOR TABLE OF CONTENTS—SEE ADVERTISING SECTION PAGE 1

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DIABETES

FREDERICK M. ALLEN, M. D.,
New York, N. Y.

(Clinical lecture before the meeting of the Medical and Surgical Association of the Southwest, at El Paso, November 2-5, 1927.)

Although I have come from the far east for this particular meeting, I feel that I am one of you because, by reason of education and long residence in California, I am very well acquainted with the western country and western people, and therefore consider you as friends.

I prefer to talk on diabetes today because it makes a somewhat more logical line of attack when given in advance of the subject of Hypertension, on which I will speak tomorrow. On today's subject I believe I shall not say anything particularly new, because there has been no development of great importance in diabetes since the discovery of insulin.

The chief practical need in diabetic treatment seems to be to make it as simple as possible, and this will be the purpose of anything I shall say, whether it be new or old. The subject is really simple and should be taught simply, yet there are many points of confusion in the minds of practitioners. Many new ideas are brought out all the time, most of them not true, and many fads are introduced which unnecessarily complicate the views and treatment. As a result, diabetes remains a doubtful subject in the mind of the average practitioner, and the treatment of the great mass of patients suffers correspondingly.

Diabetes was first recognized, by old-time clinicians, by the sweet taste of the urine. For several centuries nothing further was known of it beyond an increasing number of clinical observations. A new period began with the introduction of an entirely new form of diet by Rollo, a surgeon of the English Army, in 1796. This diet, consisting of animal foods and excluding most vegetables, seemed to help diabetic patients. The discoveries in physiology and chemistry, at about the time of Claude Bernard, threw much new light upon diabetes and the entire subject of metabolism. Still later, the discovery of diabetes following total pancreatectomy in dogs, opened a new way of experimental attack upon the problem, and gave strong confirmation to earlier pathological findings which suggested the pancreas as the seat of the disorder. Leading clinicians, especially Bouchardat, Cantani and Naunyn, developed the dietetic treatment to much higher efficiency. A period of discouragement then followed, when it was found that the severe cases usually continued to run a fatal course in spite of the advances in treatment. Also, the pathologists were confused by not finding in average diabetic autopsies sufficient pancreatic lesions to furnish a probable basis for the disease, and these perplexities were by no means cleared up after the recognition of the islands of Langerhans as the seat of the internal pancreatic function. This state of confusion was expressed clinically by the tendency to view diabetes as a symptom or syndrome rather than a distinct disease, and pathologically by attempts to locate the site of the disorder in organs other than the pancreas, for example, in the liver, thyroid, adrenals, hypophysis, or even in the body at large.

The more recent investigations have cleared up this confusion and have given us a clear and distinct conception of the nature of diabetes. It is a disorder of the islands of Langerhans in the pancreas. This fact is established by overwhelming experimental evidence, and a sufficiently close search reveals anatomical signs of injury in the pancreas in the vast majority of diabetic cases. Rare exceptions, which show no such lesions, are likewise readily explained as the result of acute inflammation causing diabetes but leaving no organic scars, as demonstrated also in animal experiments. There is basis for the assumption that every case of diabetes originates in infection or intoxication which damages the islands of Langerhans. The origin of this injury may be a chronic infection or some acute or recurrent infections, as, for

example, in the gall-bladder. In many cases it seems clearly to result from acute general or local infections, which may range from tonsillitis to appendicitis, pneumonia, thyroid or ordinary influenza. The diabetes may then ensue either immediately or only after months or years of functional wear and tear. The origin and the primary lesion of diabetes are thus explained, but the chief puzzle has been solved only by the discovery of the secondary pancreatic pathology, viz., a lesion which results from functional overstrain of the islands. The so-called hypertrophic degeneration consists in vacuolation, swelling and destruction of the island cells. This process can be so perfectly reproduced in experimental animals, and the causation and halting of it can be so perfectly controlled, that a full understanding is afforded of the similar findings encountered in many human autopsies. This destruction of the islands by functional overstrain, is the chief cause of the scarcity of island tissue in autopsies of the severest cases of diabetes: it explains the progressive loss of tolerance with uncontrolled diabetes and also furnishes the reason why proper dietary control not only relieves symptoms but also arrests the progressiveness of diabetes. This fact of the sparing of function and prevention of degeneration of the islands places the dietetic treatment upon a rational and fundamental basis. We know also that the long prevalent conception of diabetes as an inevitably progressive fatal disease is false, and that the disorder can be definitely controlled by controlling the two factors of infection and functional overstrain.

The symptoms of diabetes are too familiar to require detailed discussion. For convenience they may be divided into three groups: First, the direct consequences of the metabolic defect, such as hyperglycemia, polyuria, loss of weight and strength, acidosis, etc.; second, the indirect impairments of organs or tissues in the form of complications such as neuritis, retinitis, arteriosclerosis, etc.; third, the infections due to deficient resistance, such as boils, carbuncles, cystitis and tuberculosis. Disorders of all these three classes are either arrested or greatly benefited by thorough control of the primary metabolic abnormality.

The treatment necessary for obtaining this desired control is divisible into two classes, viz., the dietetic treatment and treatment with insulin. Of these two, the treatment by diet is by far the more important, partly because the majority of cases can be managed successfully by diet alone without the aid of insulin, and partly because accurate diet is essential in all insulin-treated cases in order to obtain satisfactory results.

DIET TREATMENT

Every physician who treats diabetes at all should know how to calculate and plan a weighed diet. This does not mean that the diet must always be weighed, because, as a matter of fact, the majority of cases are sufficiently mild that they can be controlled satisfactorily with an estimated diet. But in order to estimate the diet intelligently, to supply enough and not too much of the individual constituents and of total calories, knowledge of the calculation is necessary. One of the greatest drawbacks is the desire of physicians to be able to turn to a certain page in a certain textbook to find a diet for diabetes. This is an impossible wish because no two patients have the same needs, and any diet which is exactly right for one individual as regards calories or individual constituents, is by no means correct for somebody else. Also, strange as it may appear, in the long run the arbitrary following of printed diet slips is actually more difficult for both physicians and patients than the intelligent planning of the individual allowance. This is where institutional training is particularly valuable, because the patient thus obtains an education which lasts the rest of his life and which he seldom obtains under any method of home treatment. With the knowledge thus gained, he can enjoy better diets from the standpoint of taste and satisfaction than he is likely to obtain otherwise; the tendency to break diet is correspondingly lessened, and the family physician, therefore, usually finds much less trouble in keeping the case under control.

The principles of diet calculation are extremely simple. One gram of either protein or carbohydrate represents approximately four calories, and one gram of fat represents approximately nine calories. The percentage contents of protein, carbohydrate and fat in all the common foods are given in food tables. It is, therefore, not difficult to select the foods for each day's menu to furnish the desired quantities of the various constituents and of total calories. As these calculations are learned so readily by nearly all patients, including children, they should certainly be no obstacle to any physician.

The management from a therapeutic standpoint is almost equally simple, if fads and unnecessary complexities are avoided. It is not necessary to have determinations

of the basal metabolism or to calculate so-called ketogenic-antiketogenic ratios. The allowance of protein can be governed by ordinary bodily needs, provided no special restriction is required by a complicating nephritis. The cabohydrate allowance is subject to a considerable range of choice, especially in mild cases, or in those under insulin treatment. On the whole. moderate allowances of protein and carbohydrate are best, rather than extremely high or extremely low proportions, such as have too often been used on the basis of erroneous theories. This rule may mean perhaps fifty to 100 grams protein, or forty grams carbohydrate upward, as the daily allowance for various individuals. Diabetic diets have always been high fat diets in the sense of carrying most of their calories in the form of fat. No benefit is gained. and the pleasing quality of the diet is spoiled, by employing too great a disproportion of fat. but little actual harm results if the total calories are suitably limited. The greatest harm and danger result from the idea that fat is harmless and that it should be given in huge amounts to raise the total calories as high as possible without causing acidosis. Abundant proof has been published, and any careful observer can demonstrate for himself, that the total calories exert a tremendous influence upon the diabetic tolerance. and no diet is properly planned unless there is proper regulation of the total calories. The allowance of calories likewise is governed by simple common sense. If a patient is obese, or if there is a decided need for increasing the tolerance in order to avoid the use of insulin or to lower an excessive insulin requirement, undernutrition is used. If the patient is emaciated, he is overnourished to the extent of building him up to somewhere near normal weight. When the weight is normal or a few pounds below the average normal, the caloric allowance should be such as to maintain this condition and provide adequate strength.

INSULIN TREATMENT

Insulin is a marvelous and life-saving discovery; nevertheless one of the purposes of the treatment is to avoid its use if possible. This is not because of any special danger, for hypoglycemia and other accidents are scarcely to be feared under proper management. We, for example. in our large series of cases have never had a single death attributable to insulin. The idea that insulin offers an easy way of avoiding diet is a serious error. The endeavor to conduct the treatment without insulin, if possible, is based first upon the inconvenience of the insulin injections and also partly upon the fact that the diet must be even more strictly regulated with insulin than without. With diet treatment alone, we need to guard only against glycosuria or hyperglycemia, but with insulin we must steer a narrow course between this difficulty on the one hand and hypoglycemia on the other.

Nevertheless, when the patient cannot be kept in comfortable nutritition by diet, recourse should be had to insulin. There are a few exceptions to this rule, notably in children or in patients with tuberculosis. In these cases insulin is commonly indicated for precautionary reasons, to maintain the best nutrition and as a safeguard against loss of tolerance.

There is no arbitrary rule of dosage, the attempts to evaluate the unit of insulin according to the quantities of carbohydrate in the diet or of sugar in the urine being fallacious. A rough idea can be gained from the apparent severity of the case, so that in a case which is obviously very severe we may immediately order three fair-sized insulin doses per day. In general, the principles of dosage may be conceived as follows:

If a case is barely severe enough to require insulin, frequently one dose per day will suffice. This is commonly given before breakfast but may be given at practically any convenient time. With increasing severity of the case, the point is reached where a single insulin dose fails to prevent glycosuria through the twenty-four hours, and too great an increase of this dose results in hypoglycemia within the few hours following. Such a case may be smoothly controlled when a reasonable quantity of insulin is given in two doses at morning and evening respectively. With still greater severity, this dosage does not suffice to prevent both glycosuria and hypoglycemia. Then a smooth control is generally obtained by dividing the insulin for the day into three injections. In rare instances, particularly in young children, the fluctuations of the sugar may be controlled only with the aid of a fourth dose given sometime during the night. There is, however, no strong reason for the common custom of giving insulin in conjunction with meals. The necessity for a fourth dose can generally be avoided by proper spacing of the three doses, giving the first one an hour or two before breakfast, and the last one after supper or at bedtime, so as to shorten the night period during which the insulin supply may otherwise become deficient. A useful point to bear in mind also is that any given quantity of insulin is more effective, the greater the number of doses into which

it is divided; for example, the effect of thirty units of insulin is greater in the form of three injections of ten units each than in the form of two injections of fifteen units. It should also be remembered that heavy exercise commonly lowers the insulin requirement; for example, a patient who has been in perfect balance on a fixed program may go on a long tramp or exert himself unusually on some particular day and suffer a severe attack of hypoglycemia.

Time will not permit any detailed discussion of the treatment of complications, such as acidosis, gangrene and infections. It is well known that the presence of acidosis or active infection may enormously increase the insulin requirements, so that sometimes several hundred units may be given within twenty-four hours and no lower dosage may control the condition. Gangrene can usually be treated conservatively when only soft tissues are involved, and under these conditions healing is generally obtained by control of the diabetes, even when the circulation is extremely poor. When bone or tendon is involved in the necrosis, operation is nearly always needed. The most conservative local measures may succeed in a few instances when the blood supply is unusually good, but with the degree of arteriosclerosis present in the average case high amputation is more often required, and it is best done early, before the patient's strength is too far exhausted. Most infections are best treated by stringent undernutrition, together with enough insulin to keep the blood sugar thoroughly normal. Tuberculosis is an exception which calls for high nutrition and, frequently, high insulin dosage. With this treatment the prognosis of the tuberculous diabetic is no longer hopeless, as heretofore, but is fully as good as that of the non-diabetic with a similar infection.

In conclusion, it is theoretically possible to enable diabetic patients generally to live as long and almost as efficiently as if they had never had diabetes, provided treatment is begun at a reasonable time and is carried out with reasonable thoroughness. It is the task of the medical profession to accomplish the practical realization of this ideal so as to reduce the present high mortality from this disease.

VARIATION OF INDIVIDUAL CASES OF ARTIFICIAL PNEUMOTHORAX

JAMES W. LAWS, M. D.
El Paso, Texas

(Read before the El Paso County Medical Society.)

In a recent paper* on artificial pneumothorax, the indications, contra-indications, manner of administration and complications were tabulated. This paper dealt with pneumothorax in more or less of a general way. However, when pneumothorax treatment is begun, every individual case becomes more or less a law unto itself, and each individual case will show wide variations from other cases.

When it is decided that artificial pneumothorax is indicated in a particular case of pulmonary tuberculosis, a successful compression of the diseased lung is dependent upon the extent and character of adhesions that attach the lung to the chest wall. From fluoroscopic examination and x-ray films, valuable information is obtained as to the involvement, consolidation and cavitation over the worse lung, but very little definite information is given as to pleural adhesions. One cannot definitely determine from the Roentgen ray whether or not the induction of artificial pneumothorax will be possible. The same is true of the physical examination. The introduction of the pneumothorax needle and search for a free pleural space and manometer reading is the only way of knowing positively. If a free pleural space is found, the amount of air introduced, the manometer reading obtained will then depend upon the pleural adhesions, the fixation of the heart and mediastinum and the elasticity of the lung of the individual case. As artificial pneumothorax progresses with succeeding refills, the elastic portion of the lung is first compressed, while the diseased and less elastic portion of the lung is more slowly compressed and, conversely, when pneumothorax is discontinued the unaffected, more elastic portion of the lung re-expands rapidly, while the diseased portion re-expands slowly on account of the inelasticity caused by the consolidation of the disease prior to the induction of pneumothorax and the increased fibrosis that occurs during the time the lung is compressed. Case records and x-ray films, which follow, illustrate varying conditions in individual cases of pneumothorax.

Case 1. (Record No. 1569). Mr. E. McB., aged 45, entered sanatorium Dec. 4, 1926, with a history of trouble for twelve months, sputum positive. Right lung showed rales from apex to middle of interscapular region; left lung showed a few clicks in interscapular region. Patient left sanatorium January 8, 1926, improved. He returned to sanatorium February, 1926, all symptoms increased. Plate I (1321) shows involvement of lower portion of lung, beginning cavitation in lower lobe rather than upper quadrant, and shows compression of elastic unattached upper portion of lung. Artificial pneumothorax was induced. Patient's cough and symp-

*"Some Points to be Remembered in the Administration of Artificial Pneumothorax," read before the Southern Medical Association, Memphis, Tenn., Nov. 5, 1927, by Dr. J. W. Laws, El Paso, Texas.

toms subsided. He has gained ten pounds in weight and feels better than he has felt for the past three years. Only partial compression has relieved symptoms.

Case 2. (Record No. 1568) Mrs. C. D. W., aged 36, doctor's wife. There was some decline in health for over a year. Patient had spent three months in bed at home and after three months in bed in sanatorium without any decided improvement in symptoms, pneumothorax was advised. The physical findings were as follows: Right lung showed a few crackles in upper third; left lung showed latent rales following cough from apex to base. Sputum positive.

Artificial pneumothorax was administered over the left lung and kept up for a period of two months. Patient improved steadily, but when pneumothorax was attempted at one of the regular seven day intervals, it was found impossible to obtain a reading or to introduce air into the pleural space. At the attempted refill an air embolism, so-called pleural shock, probably occurred, possibly due to

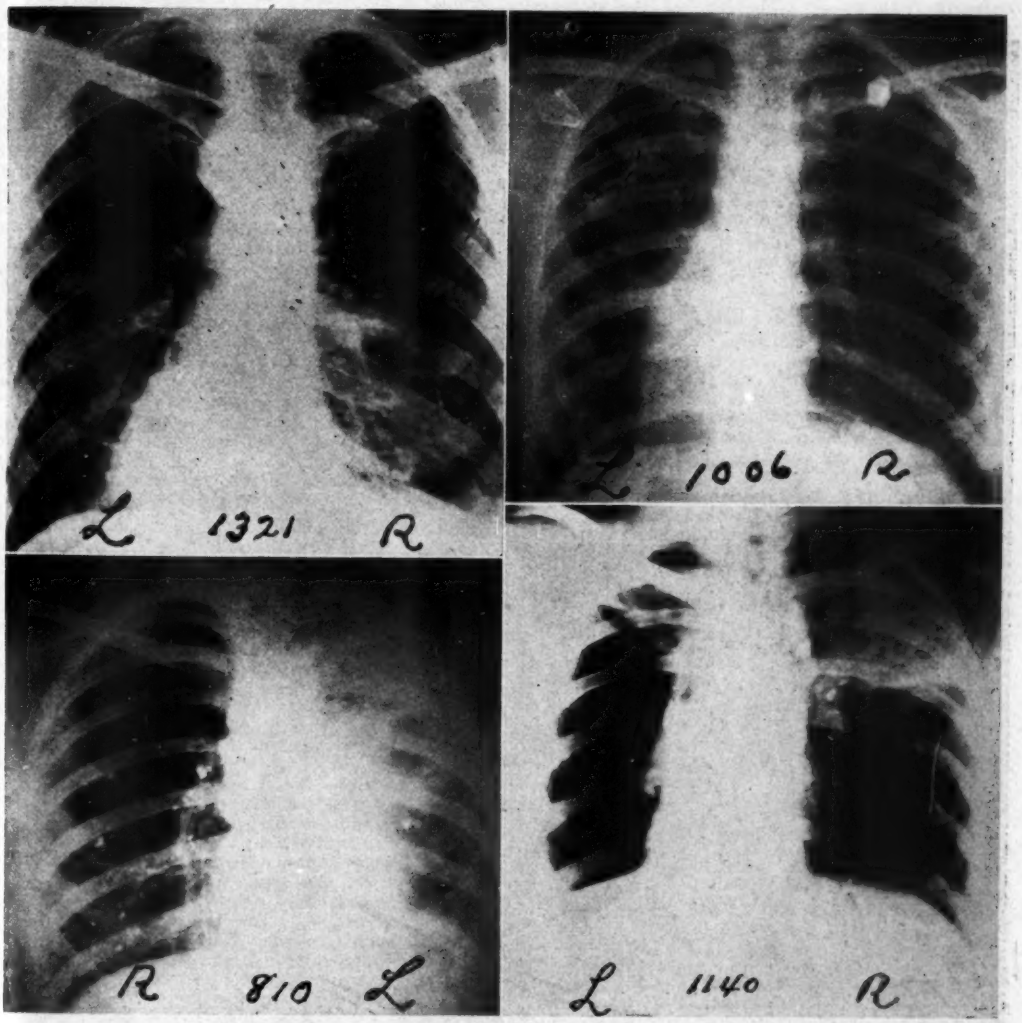

PLATE I.

Fig. 1. (Film 1321). Shows involvement of lower portion of right lung, with beginning cavitation, and partial compression of elastic unattached upper portion of lung (Case 1).

Fig. 2. (Film 1006). Condition in Case 2, at time when pneumothorax had to be discontinued.

Fig. 3. (Film 810). Condition in Case 3 before pneumothorax.

Fig. 4. (Film 1140). Amount of compression in Case 3, in left lung, at time of spread of infection into the contra-lateral lung.

puncture of the lung. At that time the patient lost consciousness for a few minutes and could not raise arms or move lower limbs and felt constriction over the chest. In a short time she recovered but raised blood for a few days thereafter. This condition rarely happens, but now and then does happen, very much to the surprise and alarm of both doctor and patient.

Plate I (1006) shows condition at the time pneumothorax had to be discontinued. At present time patient's sputum is rarely positive. There are no rales. Patient under sanatorium regime bids fair to recover,

Case 3. (Record No. 1567.) Miss R. A., aged 18. October, 1925. Doctor's daughter, college student when taken ill. Duration of trouble two years. Sputum positive. Physical examination showed right lung with few rales at angle of scapula only. Left lung showed fine and coarse rales throughout. Artificial pneumothorax was used over left side. 400 to 500 c.c., given every seven days until neutral pressure was reached. The patient improved. Pneumothorax was kept up for eleven months, then a flare-up occurred, with loss of appetite, fever, increased cough and some pain over the right lung. Plate I (810) shows lung before pneumothorax was

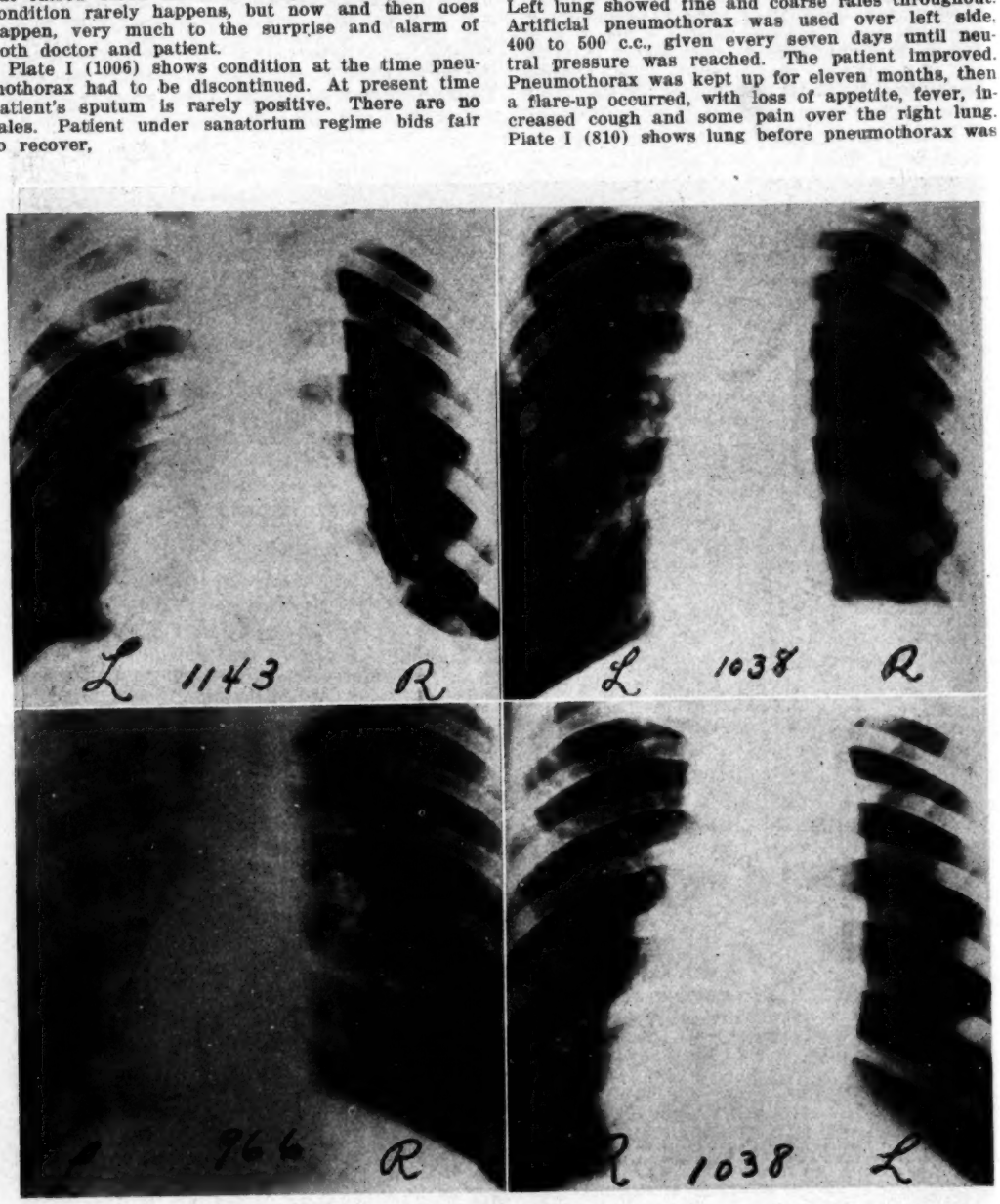

PLATE II.

Fig. 5. (Film 1143). Case 4, showing amount of compression of left lung, and infiltration in right lung, causing temporary abandonment of pneumothorax.

Fig. 6. (Film 996). Case 5, showing extensive involvement of the left lung and considerable infiltration of right lung, prior to administration of pneumothorax.

Fig. 7. (Film 1038). Left lung several weeks after pneumothorax had been discontinued, (Case 5).

used. Plate I (1140) shows amount of compression of left lung at time of spread of infection in upper portion of contra-lateral lung.

In this case of contra-lateral lung activity, pneumothorax was definitely discontinued. At the present, the patient is on bed-rest regime and is doing very well, but outlook for recovery is uncertain.

Case 4. (Record No. 1515). Mr. W. J., aged 23; May, 1925. Occupation, life insurance work. Positive sputum. Physical examination: Right lung showed sub-crepitant rales from apex to angle of scapula and occasional rales to the base, posterior, and from apex to third rib anterior; left lung showed occasional clicks in suprascapular region only. The patient was given bed-rest in the sanatorium and improved; however, on allowing him to sit up for a couple of hours daily, a return of acute symptoms occurred, so pneumothorax was advised and administered. The patient improved and was able to be up and about without symptoms and left the sanatorium. After taking pneumothorax for about one year, this patient had a flare-up of trouble in the contra-lateral lung. A small amount of fluid formed two or three times on pneumothorax side following refills, but was quickly absorbed. Plate II (1143) shows the amount of compression in the right lung and also the infiltration in contra-lateral lung at the time of flare-up. Pneumothorax was discontinued only temporarily. The right lung was allowed to re-expand to about one-half of its former compression. As a result the elastic lower portion of the lung became attached at the costophrenic angle. The patient's symptoms of activity over contra-lateral lung subsided, but he noticed that there was an increase of heavy sputum, which he suspected as coming from the right side. A small inflation of air in the right side caused a marked reduction in the amount of sputum raised. So small inflations are now used in his case, despite the increased infiltration in the contra-lateral lung.

Case 5 (Record No. 1563). Mr. W. E. V., aged 31; January, 1927. Occupation, brakeman. Duration of trouble, one year. Physical examination: Right lung showed fair vesicular breathing. A few rales were heard over the upper lobe. Left lung showed the metallic sounds usually heard over area of pneumothorax. The history of pneumothorax as told by the patient was rather interesting. The first physician in the case administered from 300 to 400 c.c. every five days and the patient improved. However, he was transferred to another sanatorium, where the physician, according to the patient, administered large inflations, 500 to 700 c. c., every other day for two weeks. The patient became very short of breath, lost weight, became ill and thought that the altitude was too high for him and came to El Paso. When the patient presented himself to our service, the heart and mediastinum were shoved over to the right side, fluid was forming on the left side, and the patient was so ill that he had to have a special nurse and appeared as though he would live only a short time. Pneumothorax was discontinued for several weeks, and when recommenced, only small inflations were used; then the patient began to improve. He is now up and about and it is with difficulty that he is kept from overexercising. Plate II (966) shows extensive involvement of the left lung and considerable infiltration of the right lung prior to the administration of pneumothorax. Plate II (1038 a and b) shows left lung several weeks after pneumothorax had been temporarily discontinued. This case demonstrates the danger of too large and too frequent infiltrations.

This case illustrates the danger and severe damage that may result from too rapid increase of high positive pressure in certain individuals. Contrast this with Cases 7 and 10 where positive pressure was of advantage.

Case 6. (Record No. 1606.) Mrs. J. C., aged 29. February 8, 1928. Occupation, housewife. In 1922, developed pulmonary tuberculosis. There was slight infection of the right lung and severe infection of the left lung. She spent about one year at Saranac Lake, where pneumothorax wah induced over left lung, 1923. The past four years has been spent in central Texas. Pneumothorax over the left lung has been kept up, refills at intervals of two weeks. She did very well until September, 1927, since which time she has had increased cough and expectoration and has noticed some soreness and pain over right lung. Plate III (1302) shows the amount of infection in the right lung and the amount of collapse of the left lung.

This case illustrates mistake of continuance of pneumothorax over the left lung disregarding increased activity over the right. It would have been much better for this patient if the re-expansion of the left lung had been started some four months ago. That is the plan that is now being followed. Whether pneumothorax will be continued or the refills placed at longer intervals depends upon future development in this case.

Case 7. (Record No. 1501) Mr. L. S., age 30, November 24, 1923. Nationality, Jewish; occupation, tailor. Slight cough, sputum positive, fever 100°, shortness of breath. Right lung showed rales over upper lobe with symptoms of cavitation in upper third; left lung negative. After two years' rest in bed, there was little or no improvement. Finally, in the latter part of 1926, there was increased activity, expectoration became profuse and the patient had a severe hemorrhage. Artificial pneumothorax was induced over the right lung. The patient improved, but cough and expectoration, although decreased somewhat, with neutral pressure, continued. Thoracoplasty was advised in order to close the cavity in the apex, but was refused. Increasing positive pressure was begun, which gradually reduced the amount of sputum and the patient's general condition improved. A positive pressure of plus 6 is now used and found to be effective in this individual case. The patient raises very little sputum, has no fever and observes only a few hours rest daily. Plate III (1229) shows lung and heart displacement with high positive pressure, which was of value in this patient. (Contrast Case 5.)

Case 8. (Record No. 1607.) Mr. M. S., age 43. February 16, 1928. Nationality, Jewish. In good health until May, 1926. About this time tonsillectomy was done under general anesthesia. He apparently recovered but in less than a month's time developed hemoptysis and for three months had hemorrhages. Cough was dry until something broke and he coughed up large quantity of sputum, which was negative for tubercle bacilli. For five months, varying quantities of pus and hemoptysis continued. In December, 1927, pneumothorax was induced over the left side to control severe hemorrhages. 400 to 500 c.c. was given twice weekly. On entering sanatorium, patient insisted on having pneumothorax, insertion of needle showed a plus 8 positive pressure. Plate III (1525) shows displacement of the heart and mediastinum at that time. In this case not enough time has been given for a movable heart and mediastinum to become fixed, nor has enough time been given for compression of the non-elastic area surrounding the abscess.

Case 9. (Record No. 1328.) Mr. J. T., age 24, 1924. Greek; occupation, waiter. Cough, sputum positive. Duration of trouble eight months, during which time he had to work. Three weeks prior to admission to sanatorium had severe hemorrhage. At time of admission, cough was harrassing, temperature 102°, decline of patient was rapid. Right lung showed a few crepitant rales posterior, near the base. Left lung showed dullness, tubular breathing, poor vesicular breathing, rales throughout front and upper two-thirds posterior. Prolonged rest might have arrested his trouble, but for economical reasons it was necessary for him to return to earning capacity as soon as possible. Artificial pneumothorax was used over the left lung and kept up for four years. During the greater portion of the four years he has worked as a waiter. Plate III (1217) shows lung re-expanding four years later. The patient has no cough, no expectoration and no symptoms. Pneumothorax was discontinued in this case. There has been contraction of left thorax, heart is drawn over, intercostal spaces are narrowed and recently small inflation of air caused pain and fever. Compression of the left lung for a longer length of time seemed to be defeating rather than assisting nature's efforts in this case, so pneumothorax has been discontinued.

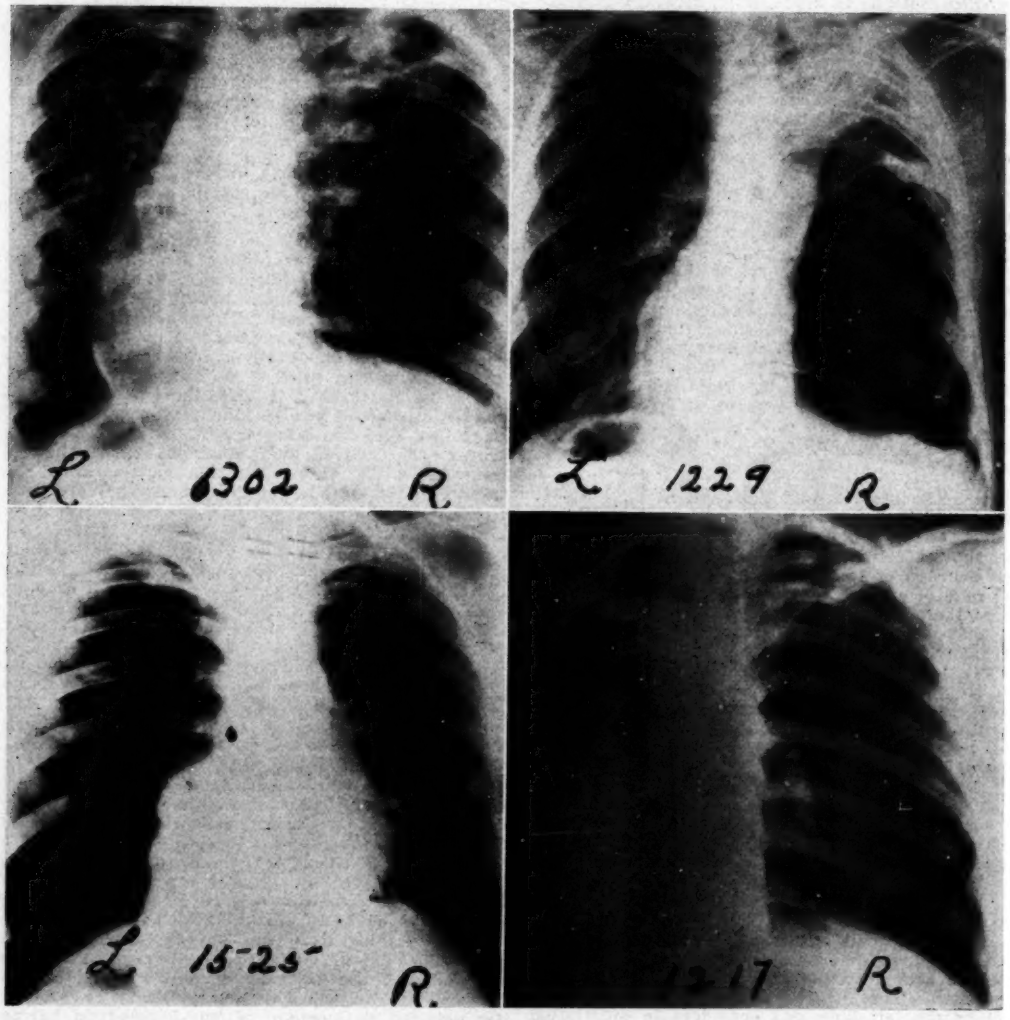

PLATE III.

Fig. 8. (Film 1302). Case 6, partial collapse of left lung, showing infection in right lung calling for readjustment of left sided compression.

Fig. 9. (Film 1229). Showing Case 7, with high positive pressure which was advantageous in this instance.

Fig. 10. (Film 1525). Case 8, with displacement of heart from too high pressure.

Fig. 11. (Film 1217). Case 9, showing right lung re-expanding after artificial pneumothorax lasting four years.

Case 10. (Record No. 1566.) Miss F. R., age 37, March 10, 1925. Nurse. Duration of trouble, one year, in bed in sanatorium in Georgia. Gained weight, but wheezing and asthmatic breathing persisted. Sputum positive. One-half cup in twenty-four hours. On admittance to sanatorium, right lung showed rhonchi throughout. Only occasional latent rales from apex to base in front and to angle of scapula behind. Asthmatic rhonchi throughout.

Artificial pneumothorax was induced over the left lung. Climate improved asthmatic condition, but did not entirely eliminate bronchial wheezes. Pneumothorax relieved the fever and symptoms of activity. Patient has been nursing for over a year and is self-supporting. Plate IV. (1290); note adhesions are still holding lung partially open. A slightly positive pressure, plus 2, holds symptoms in abeyance, but with diminution of pressure rhonchi return and a small amount of raising is positive. X-ray holds out promise that it may be possible to have adhesions severed, allowing complete collapse and complete relief of all symptoms.

This case demonstrates the value of a high positive pressure.

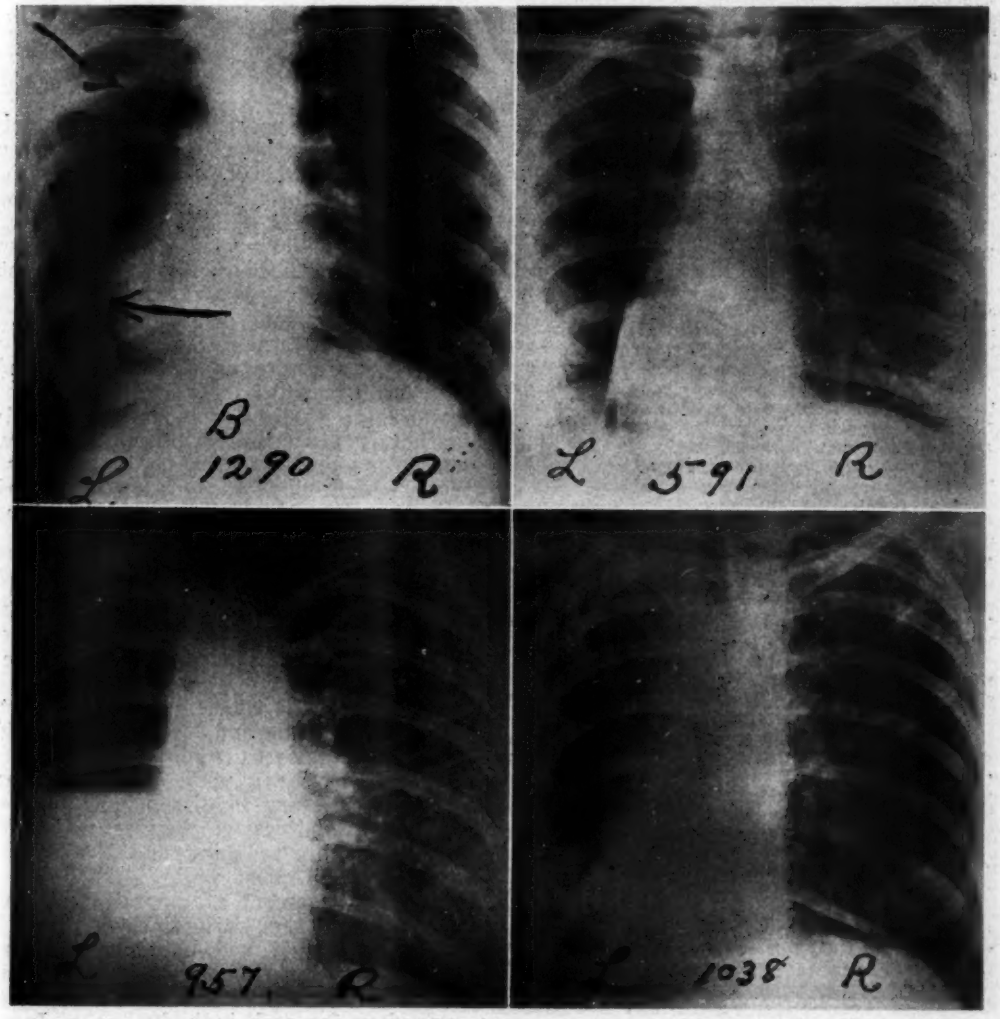

PLATE IV.

Fig. 12 (Film 1290). Case 10, in whom partial pneumothorax relieved symptoms of activity, although adhesions are holding lung partially open.

Fig. 13 (Film 591). Case 11, showing condition of both lungs prior to pneumothorax.

Fig. 14 (Film 957). Case 11, showing lung after spontaneous pneumothorax.

Fig. 15. (Film 1038). Case 11, showing present condition of right lung, and left side after drainage through intercostal fistula.

Case 11. (Record No. 1562.) Mrs. G. M., age 26. February 7, 1925. In 1921, three years after onset of symptoms, physical examination showed right lung with some slight involvement in the upper lobe. Left lung showed rales throughout, with evidence of cavitation in the upper lobe. In 1922, pneumothorax was induced over left lung. Patient improved markedly. Fluid formed in 1925, complicating the regular intervals of artificial pneumothorax and resulting in some re-expansion of the lung. Spontaneous pneumothorax occurred in November, 1926, since which time fluid has been purulent. Aspiration every seven days for four months followed until a fistulous tract, at site of aspiration punctures, opened, through which drainage now takes place. Plate IV (591) shows condition of both lungs prior to spontaneous pneumothorax. Plate IV (957) shows condition of lung after spontaneous pneumothorax. Plate IV (1038) shows present condition of right lung and the condition of the left lung since drainage through intercostal fistula.

The patient has improved with better drainage resulting from intercostal fistula. It is to be hoped that her general condition and the condition of the right lung will improve to where, ultimately, thoracoplasty can be done.

Case 12. (Record No. 601.) W. B. T., age 34. 1920. Occupation, plasterer. Duration of trouble in 1920 had been one year. The patient was unable to work. Temperature, 100 to 102, with frequent attacks of blood raising. Right lung showed rales over upper two-thirds; left lung showed granular breathing in interscapular space, with no rales. This man was placed in the sanatorium by a fraternal order which paid his expenses, and his relatives helped to support his wife and five small children. He worried over being a subject of charity and, despite three months bed rest in sanatorium, his condition showed no improvement. About this time he had a severe hemorrhage. Knowing his dependent family and the necessity, for economical reasons, of returning this patient to earning capacity, pneumothorax was induced over the right lung. In six weeks time the patient was able to leave the sanatorium.

In this case pleural effusion caused so much pressure and dyspnea that at one time aspiration was necessary and replacement by air. Plate V (633) shows right lung re-expanding after three years. About this time the patient took cold, took a few drinks of intoxicants and began to hemorrhage. Pneumothorax was recommended. Plate V (1491) shows right lung still compressed seven years later, and the patient prefers to keep up compression until all his children have finished school. In this individual case, pneumothorax is kept up indefinitely in contra-distinction to Case 9 where it seemed best to discontinue pneumothorax.

Case 13. (Record No. 998) Mrs. S. H., age 46; February, 1924· housewife. Duration of trouble two years. Right lung had no rales; left lung sup- two years. Right lung had no rales; left lung sub- to base front and back. First two years in this climate patient did fairly well, but in August, 1926, she began to run temperature from 100 to 102, cough and expectoration were markedly increased. the patient lost weight rapidly and the husband considered taking his wife back to St. Louis to die. He was advised to have pneumothorax tried. From the slides one would judge, from the thickened pleura, that no free space would be found. However, on auscultation a pleural rub high up in the axillary line was noted and a manometer reading was obtained with the first puncture. After using pneumothorax several months, fluid formed. In this case fluid pressure became so great that dyspnea and irritative cough necessitated aspiration of large quantity of fluid, but, instead of replacing air at once, patient was told to return in three days for pneumothorax. When she returned, 50 c.c. of air caused positive pressure and that condition has existed since. Gomenol is introduced in this case with the hope of preventing obliterative pleural adhesions. Up to this date the patient does her housework and is practically symptom free. Plate V (886) would seem to indicate that it would be impossible to use pneumothorax on account of pleural thickening over the left lung. Plate V (1027) shows partial compression and also shows double line of fluid formation. This patient has improved markedly, gaining some eighteen pounds in weight, is up and about, rarely coughs and raises only a small pellet of sputum daily. Since the formation of fluid, pneumothorax is given only at infrequent intervals, depending entirely upon the amount of fluid and indications for giving it.

SUMMARY

The above case reports represent only a few of the variations of individual cases of artificial pneumothorax, but enough has been shown to demonstrate the following points:

In one particular case positive pressure will do no definite harm, while in another individual case, positive pressure will improve the patient's condition.

In contralateral lung involvement, observation of the patient's symptoms and x-ray findings will be a guiding factor in determining whether pneumothorax will be definitely discontinued or only temporarily discontinued. If the patient's symptoms are watched closely following each succeeding inflation, and if the roentgen ray observation of the cavities and adhesions on the side compressed are observed, and if the condition of the contralateral lung and the displacement of the heart and mediastinum are noted, then it will be comparatively easy to adopt the procedure indicated in the individual case.

The length of time pneumothorax should be used will depend upon the individual case. In some cases it will be kept up indefinitely (for years), while in other cases, it will be necessary to discontinue its use on account of obliterative changes in the pleura of the compressed lung and the thickened pleura of the chest wall.

The management of pleural exudates depends upon the patient's symptoms, the amount of fluid and lung compression as shown by physical and x-ray examinations, and these factors will govern the line of procedure for each individual case. In some cases the pressure of fluid will adequately compress the lung and observation of the patient under the fluoroscope at stated intervals will be all that is necessary. To go into a detailed discussion of the management of pleural effusion would go beyond the scope of this paper. From the writer's experience the following facts should al-

ways be borne in mind: (1) Pleural exudates are more apt to occur where adhesions are pulled upon, where rapid compression of the lung is attempted, and where high positive pressures are used. (2) The lower portion of the compressed lung has a tendency to re-expand unobserved under pleural fluid and become attached to the diaphragm and the thoracic wall, obliterating the costophrenic angle, thereby materially interfering with future adequate compression of the lung. (3) Ultraviolet radiation often promotes rapid absorption of pleural exudates; therefore, frequent fluoroscopic observations are necessary in such cases. (4) The formation of fluid in the pleural space causes thickening of the pleura and a consequent fixation of the mediastinum; thereafter the air introduced with pneumothorax is not absorbed so readily and the refills are far-

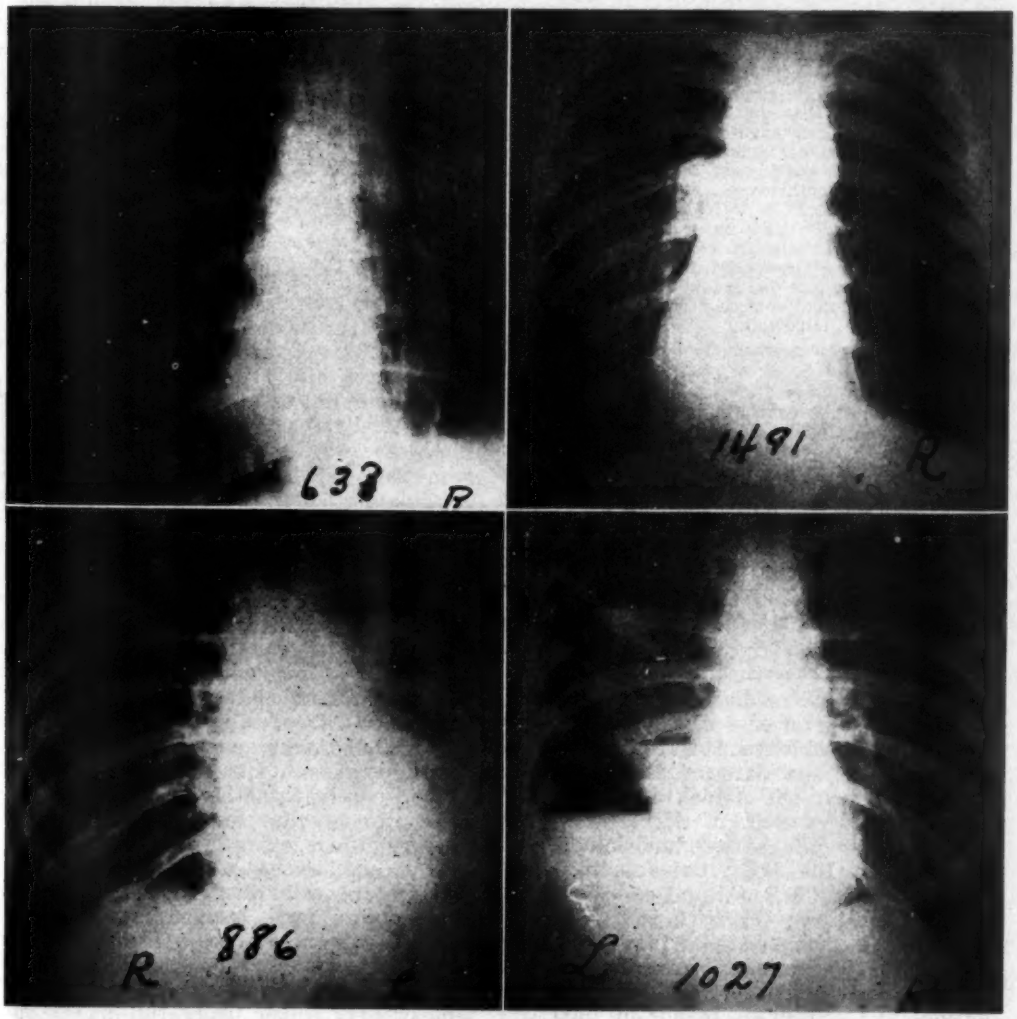

PLATE V.

Fig. 16 (Film 633). Case 12, showing right lung re-expanding after three years of pneumothorax.

Fig. 17. (Film 1491) Case 12, after re-compression of right lung.

Fig. 18 (Film 886). Case 13, showing densities which seemed to indicate that pneumothorax would not be possible.

Fig. 19 (Film 1027). Case 13, showing partial compression, with double pocket of fluid. Marked clinical improvement.

ther apart. (5) Pleural effusions that become purulent should be aspirated and immediately replaced with air, ascertaining whether or not a bronchial fistula exists. Treatment will vary with the indications in the individual case.

DISCUSSION

Dr. J. D. Riley stated that, as a rule, no two cases were exactly alike and that, while positive pressure was good in one case, it might not be in another. He took exception to discontinuing pneumothorax when trouble starts in the opposite lung, unless very recent, and asked Dr. Laws how much success he had had, stating that his own experience had been very discouraging.

Dr. A. D. Long asked what portion of the lung collapses first, stating that he could not tell until he found out about the free pleural space over the diseased area, and that the diseased area could not be compressed if you have adhesions over it. He cited a case where he is now successfully collapsing the upper diseased part and conserving the lower part; also another case with cavity in upper part and hemorrhage, in which gas is now being given to close cavity and upper third, but saving the lower part. This could not be done, if adhesions held out the upper part. In cases where he had adhesions at top he would discontinue pressure. In his opinion selective cases for pneumothorax are very important.

Dr. E. D. Price remarked that adhesions cannot always be located by x-ray and stethoscope.

In closing, **Dr. Laws** stated that, in cases where there is trouble in controlling the opposite lung, it is best not to stop the pneumothorax but to ease up on it and see what the other lung will do, and not to continue to give pneumothorax unless results were benig obtained. He stated that it was possible by using low pressure over a long period of time to get compression over the diseased lung and not over the good part.

A BIRD'S EYE VIEW OF THE HISTORY OF MEDICINE

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The history of medicine may be divided into seven more or less clearly marked periods. The first extended from the dawn of history to the date of the Coan and Cnidian schools of Greek medicine; the second period is that of Hipocrates; the third is that of the Alexandrian school, 300 B. C. to 130 B.C.; the fourth begins with Galen in 130 B. C., and ends with the sixteenth century; the fifth is the Renaissance period of medicine under such men as Vesalius, Paraceleus, Pare, and Harvey; the sixth is the period of theories and speculations and ends with Jenner in 1800; the seventh is the period of modern medicine of the nineteenth and twentieth centuries.

Early medicine was a combination of mysticism, superstition, voodoo rites, jugglery and rude empiricism. During the periods of Hippocrates and the Alexandrian school, medicine was gradually taken from the control of the priesthood where it had largely been, by a learned profession with a considerable scientific status and a high but neglected code of ethics.

The papyri of the early Egyptians and Assyro-Babylonians prove conclusively that they were well in advance of other lands in medicine. They had some knowledge of chemistry and pharmacy and they had specialists in the various parts of the body. Dissection was a sacrilege and consequently they had no knowledge of anatomy except what little could be gathered by the embalmers. Their therapeutic agents included many filthy ingredients. The Greeks gathered fragments of information from the Egyptians and the Assyro-Babylonians. Chinese medicine for forty centuries was little more than that of Hoang-ti who died 2600 B. C. Their knowledge of physiology and anatomy was wholly fantastic. India made some advance in surgery and infant feeding.

The founders of medicine are the Greeks. Aesculapius, possibly a mythical individual, is credited with being the great moving spirit of the early development. He is supposed to have lived about 1200 B. C. The poets make him the God of Medicine, and many temples were erected in his honor; in these, hygiene, empiricism and religious imposture were practiced by the priesthood, who claimed to be lineal descendants of Aesculapius and heirs of his medical knowledge.

Hippocrates, born 460 B. C., was the son of a priest of the Aesculapian temple at Cos and was given the customary hereditary knowledge of medicine. He was not content therewith and made observations, collected facts, inculcated rational principles of investigation and started the separation of medicine from jugglery and superstition. The art of Aesculapius became the science of Hippocrates. His physiology and pathology, purely hypothetical and crude, endured for two thousand years in a more or less modified form. He wrote extensively and at least twelve of his works now in existence are acknowledged to be authentic. His anatomy was learned from a skeleton and the living figure. He trephined the skull, tapped the abdomen and used a number of chemical substances for catharsis, emesis, etc. The constitution of matter was then held to be fire, water, earth and air. From these there were eight properties: hot, cold, moist, dry, hot and dry, hot and moist, cold and dry, cold and moist. The body had solids and humors. The humors consisted of blood, bile, black bile and phlegm. The humors were affected variously by the properties of matter as

enumerated and hence one or another disease resulted. The great physician had a theory to the effect that there was in the body a vital force which guarded against disease. We might safely conclude that he was the father of the modern theory of immunity; what matters the name?

His therapeutics were devoted toward the maintenance of the vital force, and were largely bleeding, famine diet and purgation. He also used diuretics and expectorants with a few empirical remedies and hygienic rules. The thing which above all makes him the Father of Medicine is that he stood for the making of extended and careful observations and the construction of theories only upon the basis of facts. The followers of Hippocrates were known as the Dogmatists; they soon yielded to the innate love of speculation and medicine promptly retrograded. Dissection was forbidden by law and hence there was little chance for medicine to advance.

Plato attempted to be a physiologist as well as a philosopher, but his ideas were purely fantastic. He lived from 430 to 348 B. C.

Aristotle was on the scene from 384 to 322 B. C. In his time all the sciences made remarkable advances. He dissected many of the lower animals. He discovered the nerves and examined the brain and its membranes. He found the heart to be the origin of the blood vessels. He knew the function of the stomach. In fact, he made observations upon nearly all organs. He was the founder of comparative anatomy and physiology. Necessarily many of his conclusions were erroneous. He taught: "The philosopher should begin with medicine: the physician should end with philosophy."

Praxagoras, a contemporary of Aristotle, distinguished between the arteries and the veins and made use of the pulse for diagnosis. The trachea had previously been known as an artery and Praxagoras believed the vessels which lead from the heart carried air and hence he named them arteries. The spurting blood from a cut artery was due to an abnormal condition existing by virtue of the cut and which caused the blood to get into the artery, where it did not belong. This theory persisted until the seventeenth century.

Alexander the Great, who died 324 B. C., had great interest in science. His successor, Ptolemy Soter, was even more enthusiastic for science and founded the Alexandrian library, placing Aristotle in charge of it. A medical school was organized which gained a remarkable reputation and remained the popular place from which to graduate even to the time of Galen, five hundred years later. In this school dissections were both allowed and encouraged. Herophilus dissected over two hundred human bodies and attained renown as an anatomist. He described the brain with remarkable accuracy and recognized the nerves as organs of sensation. Calamus scriptorius and duodenum are a part of his nomenclature. He came near robbing Harvey of the honor of discovering the circulation of the blood.

Erasistratus, also of the Alexandrian school of about the same period as Herophilus, was a great anatomist and also a physician. He discovered the tricuspid valve and taught that the arteries contained only spirits except in disease, when they contained blood. He was a fearless surgeon but hesitated to open the abdomen for abscesses of the liver and spleen. Although the Alexandrian school adn library continued several centuries, there were no more great scientists and no more discoveries of importance.

About the middle of the third century B. C. there arose and flourished a system known as the Empirics. The chief proponent of this school was Serapion. They despised the studies of anatomy, physiology and pathology, and devoted themselves entirely to the observation of the sick and a comparison of experiences. They made practically no worth-while discoveries. Medicine was divided by them into three divisions: surgery, dietetics, and pharmacy. A specialty was made of lithotomy, hernia studied and many surgical instruments were invented.

Many Greek physicians educated in the schools of the east gravitated to Rome. Among these was Asclepiades, who taught that the body is constituted of atoms and pores through which the atoms pass. In his therapeutics he directed attention to the opening and closing of pores. He used principally pleasant hygienic measures.

Themison classified the pores into constrictive, relaxied or mixed and his system of treatment, based upon the state of the pores, was known as Methodism and was a purely fanciful creation.

In the first century A. D. there came Celsus who compiled an encyclopedia of medical information, more especially upon surgery. He described operations for hernia, calculus, cataract, hydrocele, aneurysm, harelip, and amputations. He mentions the use of the ligature to stop hemorrhage.

Dioscorides, a contemporary of Celsus, compiled the first materia medica. He was

regarded as an authority even down to the sixteenth century.

In these early centuries of our era the physicians were prone not to accept the teachings of their predecessors, but to develop their own theories of practice. Each had his own school and as many students as possible. They often promised to have their students ready to practice within six months. There was much wrangling, jealousy and ill-feeling. Polypharmacy became the rule and many prescriptions contained from forty to sixty ingredients often of such materials as brains of camel, rennet of sea-calf, excrement of crocodile, heart of hare, blood of turtle, testicle of wild boar, etc. The hydropathists and the public baths came into prominence and professed to cure all of the ills to which human flesh was heir. The douche was then first used medically.

Galen, born 130 A.D., came to Rome in 166, having been educated in grammar, history, philosophy, mathematics and later in medicine. He was an indefatigable reader, experimenter and writer. He contributed to nearly every branch of medicine, and followed closely the teachings of Hippocrates. He divided the body into solids, humors and spirits. Natural spirits originated in the liver and were carried to the heart and united with the air to form animal spirits. His anatomy was learned from two skeletons which he saw in Alexandria and from the study of apes and swine. He thought that the veins originated in the liver but he believed the arteries contained blood. He also learned that the nerves came from the brain or spinal marrow and that there are nerves of sensation and of motion. He described the various organs of the body with a minuteness in advance of that of Hippocrates and Aristotle. He thought the uterus had two cavities from one of which came the male and the other the female children. One testicle produced female and the other male children. This is a fair sample of his many fanciful and erroneous theories. He advanced an endless number of theories as he wrote over seven hundred books. Galen gave temporary brilliance to medicine.

The "age of coma" for Europe ensued soon after Galen and lasted until the fifteenth century. The Greeks and the Alexandrians kept some of the skill and learning of the ancients but western Europe lost all of the science and all but a bit of contemptible art. Medicine fell into the hands of the clergy who depended upon prayer as well as physic and who used their knowledge to impose upon the ignorant and superstitious. The layman who dared to practice was dealt with harshly if his patient did not do well. It was an eye for an eye and a life for a life.

In the fourth century there was a Greek, Oribasias, who did much for medicine, more, however, as a compiler than as an investigator. He has been called the "ape of Galen" for he followed the teaching of that master in physiology and anatomy. In the sixth century there was another Greek physician, named Aetius, who has indelibly left his name for posterity. He, too, did compiling and a preserving of the work of earlier physicians. Aetius was the first Christian physician but both his christianity and medicine were tinctured with superstition.

In the latter part of the sixth century Alexander of Tralles wrote twelve books compiling the results of his experiences and studies. He was an original thinker and did not hesitate to differ with Galen. His work suffered from superstition and he used charms and talismans against disease.

Paul of Aegina is the last and perhaps best known of the Byzantine physicians. He studied at the Alexandrian school and became eminent in surgery and midwifery. He is sometimes spoken of as the founder of obstetrics, in which he was summoned to assist the Arab midwives. Ordinarily the Arabs did not allow men to function at accouchements. The Alexandrian school was burned in 640 A. D. and there were no more Greek physicians of note until the fourteenth century.

In the eighth century there was an attempt on the part of Charlemagne to revive an interest in scientific medicine but without great success and there are no names of great medical men associated therewith.

In Arabia and Spain schools were founded at Bagdad and Cordovia and became centers of learning and the development of science was encouraged. A great library was collected and the works of the Greeks were translated and studied. Three names of this period are remembered. They are: Honain, Rhazes and Avicenna. Honain translated the Greek medical writings; Rhazes was in charge of the great hospital in Bagdad for many years and left a work entitled "Continens" which consists of selections from many writers upon nearly every phase of medicine and surgery. He was the first physician to describe smallpox and measles. Avicenna, born 1000 A. D., known as "The Prince of Physicians," was a brilliant but erratic character. He left a book entitled the "Canon" which became a classic, and a text book for physicians for six hundred years. It was a compilation containing the philosophy of Aristotle and the physiology, anatomy and practice of Galen.

Among the Arabs in Spain there were two prominent medical writers in the twelfth century: Albucasis and Avenzoar. Albucasis was distinguished for his work in surgery and obstetrics. He left a highly interesting book on surgery which depicts many instruments and operations used at that time. Avenzoar added to the knowledge of the diseases of the chest describing pericarditis and inflammation of the mediastinum. The Arabs added relatively little to the sum total of medical knowledge. Law forbade dissection. Prejudice prevented male physicians from doing work upon women which in any way exposed them. To the materia medica they added alcohol, senna, manna, syrups, pomades, plasters and ointments. Chemistry was inaugurated by the Arabs.

Along about the eleventh century Italy, several centuries in advance of other European nations, developed an elevated status of civilization, education and culture; medicine reflected this glory. By the fifteenth century Italy had sixteen universities—as many as all the rest of Europe. Medicine was much encouraged, but the science of it was not advanced. Dissection was forbidden, and the teaching was entirely from old masters.

The first public dissection of a human body in seventeen hundred years was done by Mondine in 1315, a professor at Bologna. He wrote a short manual of anatomy which was long the standard textbook of anatomy. Dissection, however, remained in disrepute until the sixteenth century. In this century however there were a number of prominent anatomists among whom we mention Sylvius, Vesalius, Fallopius, Fabricius and Eustachius. Sylvius was the oldest of this group and did much to popularize the study of anatomy. Vesalius was the pupil of Sylvius and became the greatest anatomist of the age. He excelled Sylvius by daring to deny the authority of Galen and to expose his errors. "Fabrica" is the publication which made Vesalius famous and established anatomy as a science. Fallopius was an accurate observer and deserves nearly equal credit to Vesalius. Fabricius was the instructor of Harvey and made important contributions to the subject of generation and disproved the Galenic idea that the uterus had two cavities. He also discovered the valves in the veins and did much for the great discovery which Harvey was to make. Other great anatomists of the period were, Colombo who did a great deal of vivisection and who discovered the pulmonary circulation, and Leonardi da Vinci, the creator of artistic anatomy, who dissected over one hundred bodies, and left mirror notes which have been since published in six folio volumes to surpass any anatomical delineations of his own time or that of many years later.

Physiology was far from keeping pace with anatomy. Galen's idea that the body was nourished by semen had been refuted and blood had been given some of the credit it deserved. Servetus and Cesalpinus had all but discovered the circulation of the blood.

Fernel was a professor at Paris in the middle of the sixteenth century and represented the orthodox medicine of the period better than any one else. He systematized medicine and classified disease. He used the pulse to indicate the energy of the vital faculties and the condition of the heart and arteries, and the urine to indicate the qualities of the humors and the state of the liver and the veins. His remedies consisted of evacuants, purges and alteratives. Arabic authority had frowned seriously upon bleeding and it had nearly passed, but it was now revived. As for the efficacy of the therapeutic measures, little can be said and confidence in physicians had been gradually lost. Quacks and impostors prevailed and physicians began to see the stupidity of their course and attempted a reform. In this connection are mentioned the names of Argentier, Botal, Joubert and Paracelsus.

To the latter, Phillipus Aureolus Thephrastus Bombastus Paracelsus, a medical graduate of the University of Ferrara, and a noisy, egotistical, capable, shrewd individual, is due much of the credit for the reform. He publicly burned the works of Galen and of the Arabians and declared there was more wisdom in the hairs of his beard than in all the writings of the ancients; and he had no beard. His criticism was destructive and in no wise constructive. He did see the relation between goiter and myxedema, introduced chemical therapeutics and introduced the use of mineral baths.

Obstetrics has been confined mainly to midwives except in the case of emergencies. Thomas Raynalde in 1545 published his "Byrth of Mankynde" and upon this work obstetrical practice was based during the next century.

Surgery, during the dark ages, was entirely neglected by the clergy in whose hands was medicine. What knowledge existed was in the hands of low classes—barbers and bath keepers—who bandaged wounds and opened veins. Itinerants "cut for stones." "Grand Chirurgie," a book by Saliceto, an Italian, written during the thirteenth century, remained the standard text on surgery until the work of Guy de Chauliac appeared in the fourteenth century. The next work

of authority was that of Paré of the sixteenth century. He started as a barber's boy and infused new life into surgery and became surgeon to four kings. He came to prominence first because he substituted the ligature for boiling oil to stop hemorrhage of wounds. Before his time amputations were rare because it was all but impossible to control the bleeding. He contributed to nearly every phase of surgery. It was two centuries later when surgery was dissociated from barbers.

Jerome Gardan and Conrad Gesner contributed to the literature of the sixteenth century but not to the advancement of the science of medicine.

During the sixteenth century a number of new operations were introduced. Among them were trephining, couching the eye for cataract, thoracic and abdominal paracentesis, and rhinoplasty. Sanctorius invented the trocar and cannula. Although surgery and anatomy made progress during the sixteenth century medicine was stagnant.

With the seventeenth century the hold that Galen and Aristotle had upon the thought of the people of the world began to be shaken and scientific research began. Bacon founded inductive philosophy and Descartes outlined scientific principles.

Harvey, born in 1578, was a hard student, an industrious experimenter, and a concise and logical writer. He demonstrated the circulation of the blood to his students in 1615, fifteen years before the discovery was given to the world. His findings met with ridicule and opposition and he was sneered at as the "Circulator." Marcellus Malpighi, 1628 to 1694, soon demonstrated the capillary circulation and sustained Harvey who lived to see his work generally accepted and himself honored.

Van Helmont, a contemporary of Harvey, did a great deal to show the absurdities of the old medical doctrines, but unfortunately he offered a weird far-fatched theory of his own, known as spiritual vitality.

By the middle of the seventeenth century medical discoveries and theories caused tremendous agitation and there were "isms" and "cults" of all sorts. There were chemical physicians, electric conciliators, mechanical physicians, etc. Sanctorius, originator of the mechanistic school, ate his meals on a scale for years and really started the science of metabolism. Borelli applied the law of mechanics to muscular action. Others of this school who left their imprint upon history were Bellini, Baglivi, Senac, Boerhave, Mead and Pitcairn. This school went to such absurdities as endeavoring to weigh a spermatazoon and to estimate a man's age from his pulse rate.

Thomas Sydenham was one of the few of this period who contributed to the advance of pracitcal medicine. He endorsed none of the theoretical follies of the age and stood for the unbiased study of bedside phenomena. He described chorea, scarlatina, bronchial pneumonia, gout and hysteria.

Thomas Willis (1621-1675), described typhoid fever, puerperal fever, dementia paralytica, and myasthenia gravis.

The seventeenth century surgery was that of the earlier periods; two names, Fabry of Germany and Richard Wiseman of England, deserve special mention for maintaining surgery at the level which it had already reached.

Robert Boyle (1627-1691), is known as "the father of modern chemistry," as he did a great amount of original investigation in chemistry and therefore deserves a place in the history of scientific medicine.

Louisa Bourgeois made important contributions upon sterility, labor and other problems of female diseases. Francis Mauriceau established obstetrics and diseases of women as a science by publishing a work on the subject in 1668; this was translated into many languages and exerted tremendous influence all over Europe. Julien Clement delivered the queen and other prominent women from 1670 to 1682 and male midwifery became the fashion both in France and England. The Chamberlins, an English family of physicians, invented the forceps and sold the idea to two Dutch physicians, all of whom kept the idea secret. To John Palfyn goes the credit for designing the modern instrument.

Contributing to anatomical knowledge in the seventeenth century were many men, such as Thomas Wharton who made extensive investigations on the structure and function of the glandular system; Aselli who discovered the lacteals; Pecquet, who found the thoracic duct, and described the flow of the chyle; Bartholin, Steno, and Vieussens who studied the brain; Willis who described the circle of Willis and named the cerebral nerves; and Schneider, Spigelius, De Graef, Meibomius and Peyer whose names are identified with the structures they discovered.

Newton, Kepler, and Descartes advanced our knowledge of vision and led to the discovery of the microscope. Leewenhoek was the first to see bacteria and to lay the foundation for the germ theory of disease. He also demonstrated the existence of spermatozoa in the semen.

The eighteenth century opened with three great Germanic physicians: Boerhaave,

Stahl and Hoffman. Boerhaave was the most famous; his knowledge extended to all phases of medicine and he was the highest authority upon botany and chemistry. He was a voluminous writer and was most noted for his bedside teaching. Stahl is sometimes credited with being the originator or precursor of homeopathy. He also called attention to the great influence of the mind over the body and was the forerunner of psychotherapy. Hoffmann taught that disease results from the contractions or relaxations of the capillaries. Cullen was a skillful Scotch physician who taught that disease was largely neurotic in character. John Brown was a pupil of Cullen and believed that disease resulted from lack of stimulation or from too much stimulation; he had a table of diseases and remedies and the only duty of a physician was to learn the table and to make diagnoses. His system penetrated to Germany, France and Italy. Erasmus Darwin had a unique system dealing with the sympathetic action of the organs; it perished wtih him.

Albrecht von Haller (1708-1777), discovered the irritability of muscle tissue and made many other important contributions to physiology and is known as the father of physiology.

Xavier Bichat (1771-1802), had a useful but short life; he discussed the relative place of vital and physical forces in the body and discovered that the parenchyma of organs is made up of simple tissues.

Lieberkuhn was one of the first of a group of microscopical anatomists, he was the invetnor of the solar microscope and with it he demonstrated in a new way the circulation of the blood.

Senac added to the anatomical knowledge and studied the diseases of the heart. Thebesius named the foramina of the heart. Mascagni demonstrated the lymphatic system. The physiology of generation was studied by Haller, William Hunter and Morgagni. Priestly and Lavoisier discovered oxygen and led to an understanding of the physiology of respiration by Lavoisier, Laplace and Lagrange.

Théophile de Bordeu set forth the significance of the pulse in disease and wrote upon the internal secretions. Leopold Auenbrugger in 1761 described percussion of the chest for the purpose of detecting abnormal conditions. In this same year Morgagni published a collection of postmortem records, described many new diseases and associated pathological conditions with bedside findings. This was the beginning of true pathology.

In 1743 in France and 1745 in England the association of barbers and surgeons was abolished and surgery made rapid strides and became the peer of medicine, as it attracted a better class of men. Desault in Paris established surgical clinics. Cheselden in England devised a number of new operations, especially lithotomy and one for occluded pupil, and introduced the tourniquet. Valsalva discovered that deafness was due to closure of the Eustachian tube, and contributed to aural surgery. John Hunter was one of the greatest lights of surgery and physiology. He operated for aneurysm and described the hard chancre. He was the founder of surgical pathology by his investigations of the teeth, the blood, inflammation, gunshot wounds, and regeneration and transplantation of tissues. Larrey, surgeon to Napoleon's army, devised our present ambulance system of evacuating the wounded from the battle fields.

Auld, Smellie, Baudelocque and others in this period defined natural labor, taught the use of the pelvimeter and forceps, introduced symphysiotomy and brought obstetrics to a high state of development.

The introduction of vaccination by Edward Jenner, (1749-1823) was the outstanding event of the eighteenth century. Unselfish devotion and pure love of humanity was gloriously exemplified in this great country physician. The greatness of his work and the nobleness of his character were universally recognized before he died.

The nineteenth century was a period of exceptional activity. The one to initiate this activity was Phillipe Pinel. He was followed by Corvisart, who made active use of percussion and was Napoleon's favorite physician. Laennec (1781-1826), devised the stethoscope and wrote a book on auscultation and diseases of the chest. Louis was the originator of medical statistics and wrote a great classic on phthisis, calling attention to the apex as the favorite location of phthisis; another on typhoid fever, giving the disease its present name. His statistics showed the harm of blood letting in pneumonia and caused its discontinuation.

Bretonneau (1771-1862), did great work in diphtheria. He and Velpeau first located the main lesions of typhoid in the Peyer's patches. They advanced the doctrine of specificity in diseases. Cruveilhier described disseminated sclerosis. Ricord differentiated gonorrhea and syphilis. Graves and Stokes introduced the practice of counting the pulse by the watch and Graves described exopthalmic goitre. Bright, Addison and Hodgkin each described the disease associated with his name. About the same time Parkinson described paralysis agitans. Wun-

derlich introduced the clinical thermometer. Schonlein described purpura hemorrhagica and began to lecture in German instead of Latin, which had been the prevailing language for all scientific lectures. Skoda advanced physical examination of the chest. Rokitansky was a great pathologist; Semmelweis recognized puerperal fever as a bacterial disease; and Oliver Wendell Holmes did a great deal to have puerperal fever understood in America. Willan, Bateman, Alibert and Hebra were renowned dermatologists.

In America, Otto described hemophilia; James Jackson, alcoholic neuritis; John Ware, delirium tremens; and J. K. Mitchell the spinal arthropathies; Gerhard differentiated between typhus and typhoid fevers. Daniel Drake described milk sickness.

The great anatomists of the age were the first, second and third Alexander Monros, John and Charles Bell, Robert Knox, Henry Gray, Bichat, Henle, Hyrtly, Joseph Leidy and Oliver Wendell Holmes. Henle was the founder of pathology. Schleiden and Schwann developed the cell theory and furthered the study of histology. Virchow is the great name in cellular pathology. John Hunter was the great eighteenth century surgeon, anatomist and pathologist. Astley Cooper was a pioneer in ligating arteries. Aston Key a pupil of Cooper tied the external iliac, the subclavian and the carotid for the first time. Colles has a law and a fracture. Syme has an amputation and was the teacher of Lister. Dupuytren has a contracture. Velpeau, Malgaigne, and Nelaton were great surgeons of France. Pirogoff was a noted surgeon of Russia.

Opthalmology was established by the work of two Langenbecks, Dieffenbach, Stromeyer and the elder Graefe. Orthopedic surgery and plastic surgery were created by Delpech, Dieffenbach, Brodie, Fergusson, Stromeyer and the elder Graefe. Physick of the University of Pennsylvania is the father of American surgery. Dr. John Warren of Boston did the first shoulder amputation in 1781 and his son was an able plastic and orthopedic surgeon. Mott, Valentine and Wright Post followed Cooper in ligating large blood vessels.

Nathan Smith founded three medical schools and was a successful surgeon; he also founded the American Medical Association. Marion Sims created the specialty of operative gynecology by his brilliant work on vesico-vaginal fistula and among his brilliant followers have been Emmet, Battey, Thomas, Mott, Howard Kelly and others. Benjamin Rush was a voluminous writer and a famed physician. Francis Rombery, John Bard, Hosack and Horner, are other prominent physicians of the period. Samuel Bard was physician to George Washington.

Crawford W. Long was the first to use ether anesthesia and was soon followed by Morton, in an independent discovery. Pasteur was the father of bacteriology and Lister of antiseptic surgery. Manuel Garcia invented the laryngoscope and Helmholtz the opthalmoscope. Czermak and Turck made practical application of the laryngoscope and established the specialty of laryngology. Charles Darwin of evolution fame did a great deal for experimental medicine, embryology, comparative anatomy and physiology. Magendie and Claude Bernard were the founders of experimental physiology and medicine. Johannes Miller was famed for work upon the physiology of the nervous system. William Beaumont did epochal work in the physiology of digestion. The physiology of the circulation was studied by Carl Ludwig and Poiseuille. Stephen Hale was the pioneer in measuring the blood pressure. Robert Koch discovered the tubercle and cholera bacilli. Roux and von Behring discovered the diphtheria antitoxin and were the founders of serum therapy. Metchnikoff, Wright and others originated vaccine therapy for bacterial diseases. Bordet and Wassermann deserve credit for founding sero-diagnosis. Paul Ehrlich established specific chemo-therapy. S. Weir Mitchell was a famous neurologist and poet.*

*A Review of the Peaks of Medical History—An Outline of the Evolution of Medicine for the Use of Medical Students and Practitioners—by Charles L. Dana, A. M., M. D., LL. D., Professor of Nervous Diseases, Cornell University Medical School; Ex-president of the New York Academy of Medicine; etc.; Illustrated with 43 Full-page Plates and 16 text illustrations; Second Edition; Paul P. Hoeber, Inc. New York; 1928; $3.00.

POISONOUS SNAKES AND TREATMENT OF THEIR BITES

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(Note:—At a recent meeting of the El Paso County Society, at El Paso, Texas, Dr. Afranio do Amaral gave a talk on the treatment of snake-bite poisoning by Antivenin. Representing the substance of his talk, the following material has been taken from the October, 1927, issue of the Bulletin of the Antivenin Institute of America, with the two illustrations shown. Following the article is a communication from Col. M. L. Crimmins, U. S. Army, retired, who is the Texas representative of the Antivenin Institute.)

DIFFERENTIATION OF POISONOUS SNAKES

From a purely scientific standpoint, most snakes must be considered venomous, as they possess on each side of the head, beyond the eye, a more or less well-developed gland (supralabial) that yields a viscous se-

cretion, capable of exerting a toxic or destructive action whenever it comes in contact with the inner tissues of animals. From a practical standpoint, however, only those snakes are considered poisonous which, upon biting, are able to inject the secretion of their supralabial glands more or less deeply into the tissues of their prey or enemy. These snakes are included in two groups, which in Ophiology are called "proteroglypha" and "solenoglypha."

The proteroglyph ophidians possess one small fang longitudinally grooved and situated one on each side in the upper and front part of the mouth; each fang is implanted in the anterior portion of the maxilla and this is firmly attached to the other bones of the skull. The proteroglyph snake fangs are practically devoid of any motion and this is one of the reasons why we know of so few bites inflicted by these snakes in this country. Another reason lies in the fact that the members of this group are rather tame or of gentle and amiable temperament and have a comparatively small mouth (Fig. 1). The "Coral Snakes" are the only representatives of this group in the Nearctic zone.

The solenoglyph snakes are provided with a very large fang, hollow like a hypodermic needle, and situated one on each side in the upper and front part of the mouth; but, contrary to what is found in the proteroglyph, these fangs are freely movable in many directions, as the maxillary bones in which they are implanted are very loosely attached to the skull, but very closely connected with powerful muscles (Fig. 2). These snakes, which are responsible for almost all the accidents reported, are most commonly called "Pit-Vipers," because they bear on each side of the snout, between the eye and the nostril, a supplemental pit or hole, which is never found in other snakes.

The distinctive characters of the representatives of these two groups in the Nearctic zone may be summarized in the following key:

- (a) Proteroglyph "Coral snakes" — Body slender and cylindrical, of red color, with black rings edged with yellowish; head as wide as neck (genus **Micrurus**)
  - Head black to about the eyes, then yellow; nape with a broad black ring followed by a yellow one— **M. fulvius** (Harlequin Snake).
  - Head all black; nape with a yellow ring followed by a black one— **M. Euryxanthus** (Sonoran Coral Snake).
- (b) Solenglyph "Pit-vipers" — Body voluminous and flat, of dull colors; head wider than neck.
  - Tail without rattle
    - Head top covered with shields—genus **Agkistrodon**
      - **A. mokasen** (Copperhead).
      - **A. piscivorus** (Cotton-mouth Moccasin)
    - Head top covered with shields—genus **Sistrurus**
      - **S. catenatus** (Massasauga)
      - **S. miliarius** (Pigmy Rattler)
  - Tail with rattle
    - Head top covered with scales—genus **Crotalus**
      - **C. horridus** (Timber Rattler)
      - **C. adamanteus** (Eastern Diamond-back Rattler)
      - **C. confluentus** (Prairie Rattler).
      - **C. atrox** (Western Diamond-back Rattler)
      - **C. exsul** (Red Rattler)
      - **C. oreganus** (Pacific Rattler)
      - **C. mitchellii** (Bleahced Rattler)
      - **C. molossus** (Black-tail Rattler)
      - **C. cerastes** (Horned Rattler)
      - **C. tigris** (Tiger Rattler)
      - **C. lepidus** (Green Rattler)
      - **C. triseriatus** (Spotted Rattler)
      - **C. willardi** and perhaps 2 or 3 more species

DISTRIBUTION AND HABITS OF POISONOUS SNAKES

Proteroglypha

Micrurus fulvius, popularly known as the Harlequin Snake, is found all through the Southeastern States from North Carolina to Florida and westward through the Gulf States to Mexico. It abounds in humid places, and lives under the ground or in dead leaves and feeds on other snakes or on small subterranean lizards.

Micrurus euryxanthus, the Sonoran Coral Snake, is found more toward the Southwest, being apparently limited, in the United States, to the region between the Rocky Mountains and the Colorado River and thence south into Northwestern Mexico and California. This snake, although accustomed to living in dryer places, is also found under the ground and feeds on other snakes or burrowing lizards.

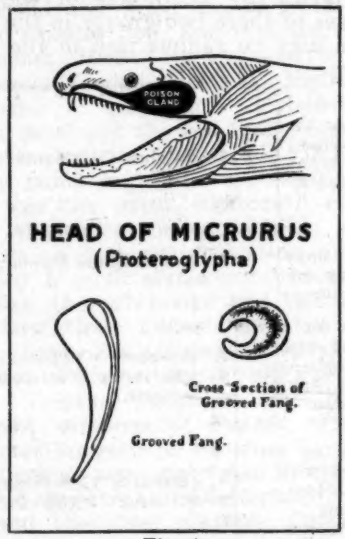

Fig. 1.

The two species of **Micrurus** must not be mistaken for other red or bright-colored ringed snakes also called "Coral-snakes," which, however, are not venomous. The false coral snakes can be told both from **Micrurus fulvius and M. euryxanthus** because in the former each yellowish ring is bordered by two black ones, just the reverse of the arrangement in **Micrurus,** in which the black ring is bordered by two yellowish ones.

Solenoglypha

Agkistrodon mokasen, the Copperhead, also called Highland Moccasin, Chunkhead, Deaf Adder, Pilot Snake and Poplar Leaf, inhabits the Eastern States from Massachusetts and Southern New Hampshire to Northern Florida west to central Illinois, Kansas, Arkansas and Texas. It is found in hilly and in rocky places, sometimes near streams, and feeds on mice and also frogs and small birds. This species causes about two-thirds of the bites that are reported in the Eastern States, especially in Pennsylvania, Maryland, Virginia and West Virginia.

Agkistrodon piscivorus, the Cotton Mouth Moccasin, also called the Water Moccasin, lives in the lowlands from Southeastern Virginia to Florida and the Keys and north through the Mississippi Valley to Southeastern Missouri and Southern Illinois and west through Texas to the Rio Grande. It is usually met with in swampy places or even in water and feeds on batrachians, fish and also rodents. The moccasin seems to be responsible for the majority of the bites observed in the Southeastern and the Gulf States, excepting Texas.

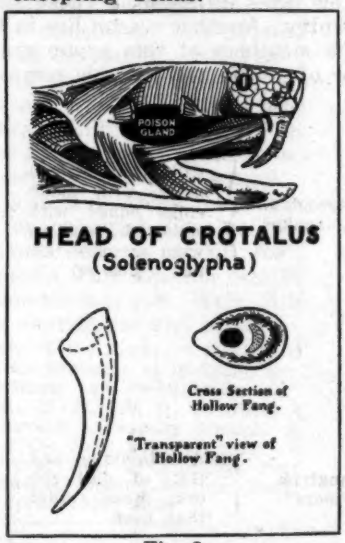

Fig. 2.

Sistrurus catenatus, the Massasauga, is represented by two races, one living from Western New York through Southern Ontario (Canada) and the Southern Peninsula of Michigan to Kansas, and the other being found from Western Kansas through Oklahoma and Western Texas to Southeastern Arizona and Northeastern Mexico. This wide-spread species inhabits prairies and swamps and lives on small rodents and batrachians.

Sistrurus miliarius, the Pigmy Rattler, also called Ground Rattler, has about the same range as the Cotton Mouth Moccasin, since it is found from Southeastern North Carolina to Florida, west through the Gulf States to Western Texas and Oklahoma and north through the Mississippi Basin to

Arkansas and Southern Missouri. The Pigmy Rattler seems to prefer dry ground and is usually found among leaves or in grass, where it finds rodents upon which it feeds. In the lowlands of Eastern Mexico lives a third species of this genus, to wit, **Sistrurus ravus**, which shows about the same habits as the North American Massasauga. Both the Massasauga and the Pigmy Rattler do not grow very large and usually secrete very little venom. Nevertheless, several cases are known of bites and even death (of young people) caused by them.

Crotalus horridus, the Timber Rattler, in many places known as the Banded Rattler, Black Rattler or Canebraker, is well-distributed all over the Northeastern States to Georgia in the South and to the Great Plains in the West. It is usually found on ledges or in crevices of rocks, in woody and hilly districts and feeds on all sorts of rodents and occasionally on birds. This species is not very irritable and causes comparatively few bites.

Crotalus adamanteus, known as the Eastern Diamond-back Rattler, is the largest of all poisonous species of North America, where its range extends from Southern North Carolina to Florida and the Keys and west to Louisiana and the Mississippi River. It is found about swamps and feeds on rodents. The poisoning caused by this snake is, as a rule, very severe, producing extensive mutilation, when it does not end fatally.

Crotalus confluentus, the Prairie Rattler, is found in the region of the Great Plains from Oklahoma, Kansas, Nebraska, South and North Dakotas to the adjacent region of Canada and west to the Rocky Mountains or a little beyond. As its common name indicates, it is a typical snake of the prairies; it feeds on all sorts of small rodents.

Crotalus atrox, the Western Diamond-back Rattler, is found more toward the South and West, its range extending from Texas to California, and south into Mexico and Lower California. It appears to like dry and rocky places and also agricultural districts, where it secures the necessary supply of rodents on which it subsists. This species alone is responsible for about one-fourth or one-fifth of the cases of poisonous snake bites reported in this country every year, with a death rate as high as 35 per cent.

Crotalus exsul, the Red Rattler, from a morphological standpoint, is the nearest relative to the previous species. Its range extends from Southern California into Mexico, Lower California and the Islands of the Gulf of California, therefore, overlapping to some extent the range of **Crotalus atrox**. It is found in rocky places, seldom away from cactus groves, and feeds on rodents.

Crotalus oreganus, the Pacific Rattler, in some places known as the Black Rattler, is found all over the West Coast, from British Columbia (Canada) to Southern California and east to Western Idaho, Nevada, and Arizona. It usually looks for shelter in fountainous and woody districts and feeds on rodents and occasionally on lizards.

Crotalus mitchellii, the Bleached Rattler, inhabits the territory between Arizona, Sotheastern California and Lower California, where it finds many rocky places, cactus groves and all kinds of thorny shrubs, where it hides from enemies during the day. As all the other rattlers, it comes out at night to seek food, which consists of rodents and lizards.

Crotalus molossus, the Blacktail Rattler, inhabits the Southwest from Western Texas to Southern Arizona and the highlands of North Mexico, and is also said to be found on San Esteban Island in the Gulf of California.

Crotalus cerastes, the Sidewinder or Horned Rattler, is found in the sand of the desert plains from Northeastern and Lower California through Southern California to Southern Utah, and Southwestern Nevada and south into Arizona. It feeds on lizards and occasionally on rodents.

Crotalus tigris, the Tiger Rattler, has about the same range as the Sidewinder, namely, Southern California, Southern Nevada and Arizona, but seems to feed on rodents only.

Crotalus lepidus, the Green Rattler, is found in the mountains from West Texas, South New Mexico and Arizona and the adjacent territory in Mexico. Very scanty information is available on the feeding habits of this species, but it seems to take mice and lizards very readily.

Crotalus triseriatus, called the Spotted Rattler, is a small species confined to the mountains of Southern Arizona and the central plateau of Mexico, and feeds on lizards. In the United States, this species has heretofore been incorrectly called **Crotalus pricei**.

Crotalus willardi is another small species and has heretofore only been found in the mountains of Southeastern Arizona.

Besides **Crotalus terrificus**, the Neotropical Rattler, there are perhaps a few more forms of rattlesnakes, numbering about two or three, all of which are confined to the Lower California region. Their status, however, is not yet very clear, so that they do not deserve special mention in this paper.

BEHAVIOR OF POISONOUS SNAKES

The behavior of the Nearctic poisonous

snakes varies widely according to the species considered. As a rule, our Coral Snakes are tame, whilst the Pit-vipers are more or less excitable. Both **Micrurus fulvius** and **M. euryxanthus** have secretive habits and usually do not bite unless hard pressed by some one unaware of their venomous nature.

The Copperhead is a rather vicious snake, which gives no warning of its presence while in the open, as it moves very suddenly and begins striking in any direction. In captivity, however, it becomes tame very rapidly.

The Cotton Mouth Moccasin attacks everything that moves about it; it first widely opens its mouth and then strikes in any direction from which it perceives danger. The common name is taken from the fact that its mouth is whitish within, thus contrasting very noticeably with the color of its body, which is rather dark or blackish.

Of the Rattlers, the species of the West Coast seem to be the least irritable, as Klauber recently pointed out in the following paragraph:

"It is probable that there is as much difference in temperament among the individuals of any one species of rattlesnakes as found in this area, as there is an average difference between the several species. All four local species seem to be relatively inoffensive. Invariably they attempt to escape, and I have yet to experience in the field an instance of a snake adopting an offensive attitude. While some individuals will put up a fight when cornered, their actions are apparently entirely defensive. Those found moving are usually more ready to fight than those which are coiled and resting. Some individuals will not even attempt a defensive fight and may be roughly handled without showing the least disposition to bite, or even rattle. **C. mitchellii** ordinarily exhibits a somewhat quicker readiness to fight than the others. **C. exsul** is very definitely the least offensive, and in this differs considerably from its nearest relative, **C. atrox atrox.** On only two occasions have I observed specimens of **C. exsul** to give notice of their presence by rattling before being disturbed; in both cases, in fact, they would have been passed by had they not rattled. There is, of course, no way of estimating how many hundreds of snakes I have passed closely in the field which have saved themselves by making no sound. In two cases recently I have found rattlers by hearing the characteristic "click" which they make when drawing themselves into a defensive coil, but without rattling. One of these was a specimen of **C. exsul**, the other, **C. mitchellii.**"

Next to the Western Rattlers comes the Northeastern species, that is the Pigmy and the Timber Rattlers, in regard to which Ditmars has recently expressed the following opinion:

"Near and frequent contact with humans appears to have influenced the habits of our eastern reptiles. They usually keep close to sheltering holes or crevices, and when disturbed seek to escape as quickly as possible. Or they may try other tactics and remain quite motionless with the idea of the intruder passing them by unnoticed. They are not nearly so vicious or apt to strike as the poisonous reptiles of the southerly latitudes. Accidentally stepped on or touched by the hand of the careless climber, they will instantly bite, as they are extremely nervous. They are to be seriously reckoned as a hazard these days of hiking, camping and auto picnicking, as the great majority of our growing legions of outdoor enthusiasts are quite devoid of woodcraft."

The two Southern Rattlers, **Crotalus adamanteus** and **C. atrox,** are by far the most excitable and most vicious of all the Nearctic reptiles. Of their behavior the best description that has ever been printed is that of S. W. Mitchell, which I shall quote in full as it appeared in his memorable work on Rattlesnake Venom, now out of print:

"When the Rattlesnake is in repose and unmolested, it sometimes lies at length, sometimes coiled or wrapped fold on fold in the loops formed by other snakes which may happen to be in the same box. So soon, however, as cause is seen for alarm, the snake extricates itself, if among others, and at once throws its body into the coil so familiar to any one who has seen serpents, whether venomous or not. Sometimes on the edge, more often in the center of the coil, the tail projects far enough to admit of its vibrating freely and with singular swiftness. The head is raised a little above the rest of the body, but not usually more htan 3 or 4 inches, even in large snakes. The neck and upper end of the trunk are not thrown into complete circles, but lie in two or three abrupt curves across the mass of the coiled body. The snake is now in position to strike. While thus at bay, in an attitude of singular grace, the long black tongue is frequently protruded—a common movement among all serpents when irritated. Just before the blow the snake makes a hissing sound, which is caused by the act of expiration, and is due to the passage of air through the narrow glottis. It is louder in certain innocent serpents than in the crotalus.

"The mechanism of the forward cast of the body, which next occurs, is a very simple matter. The muscles which lie upon the convexity of the bending formed by the upper part of the snake are suddenly and violently contracted, so as abruptly to straighten the body, and thrust it forward in a direct line. The force resulting from this motion is not very great, as I have often ascertained when a snake has struck the end of a pole which I was holding, nor could it alone suffice to bury the fang in a tough skin were it not for the acts which follow and aid it. In effecting this forward thrust of the head and neck, the serpent employs only the upper part of its body, and consequently is unable, under any circumstances, to strike at a greater distance than one-half its length, while usually its projectile range does not exceed a third of its length. An impression prevails that when the snake lies coiled its head is raised very high to enable it to strike downward. It seems, however, to be of no moment in what direction the danger threatens, since it can at will cast itself forward, downward, or almost directly upward."

In regard to the direction of the coil, I have observed that in most of the cases, these rattlesnakes, upon being excited, coil up in such a way as to leave the left side of the body inside of the coil until it comes close to the neck which is doubled into an S-shaped loop. This loop is just what permits of their thrusting the head forward.

In some cases, as often happens with the Western Diamond-back Rattler when it is very angry, it gradually raises its head well up in the air from 10 to 15 inches or more from the ground, according to its size. Under these circumstances, it does not strike upward, but sideward or downward. However, when it is lying coiled, its head resting somewhere on its body, it can strike almost vertically upward, as the thrust often times forms an angle of nearly 70° with the underlying ground.

PREVENTION OF SNAKE POISONING

Snake poisoning with all its dreadful consequences, can be prevented in two ways, first, by avoiding snake bites; and, second, by applying a specific treatment against the effects of the bite.

1. Prevention of snake bites

Various means have been developed for the prevention of snake bites and they can be grouped into two main types of measures aiming respectively at (a) individual protection, and (b) collective protection.

(a) **Individual protection.**—Since it is known that, according to the different districts considered, from about 60 to 90 per cent of the bites of poisonous snakes are inflicted on one's feet or legs, it is simply a matter of common sense for one to wear shoes and heavy leggings to achieve the necessary protection, whenever one goes into a snake-infested district.

In this respect, a few poisonous snakes must be considered separately. The bites of the Copperhead and of the Timber Rattler, for instance, are sometimes inflicted on one's hands, because both of these snakes live on ledges and so may be encountered in the path of one who is trying to climb a rock, using his bare hands in order to help the ascension. In this case, therefore, the best thing for one to do is to avoid the use of his hands in order to climb where these venomous snakes may be found.

In the case of the Cotton Mouth Moccasin and the Florida Diamond-back Rattler, both of which live in marshy places, the conditions of the bite are also somewhat different. Since these snakes can reach as high as the thigh of one who is trying to negotiate a marsh or a stream, the best protection is afforded by a pair of rubber wading boots going up to the hip. Sometimes, as in the particular case of the Florida Rattler, that is known to grow to enormous proportions and have very long and strong fangs, it is advisable for anybody who wants to walk through swamps, to allow the upper part of the rubber wading boots to hang down over the knees, thus leaving an extra space between the two layers of rubber. In this way, if the rattler happens to strike the person, his fangs cannot go through the two thicknesses of the boot.

For most species, however, of poisonous snakes in this country, a pair of leather puttees, besides the shoes, will give one almost perfect protection against snake bites.

(b) **Collective protection.**—Collective protection is secured chiefly through the extermination of venomous snakes. This may be done by several methods grouped in the following way: 1. By systematically killing venomous snakes; 2. by capturing the snakes alive; 3. by raising animals that feed on snakes. Let us consider these methods briefly.

1. For many years past a few countries have tried to get rid of snakes by systematically killing them. In India, the British officers have sought to diminish snake poisoning by encouraging the killing of snakes and paying a fixed bounty for each head brought in. Despite all efforts in this direction, the British authorities have not been very successful in their campaign, as, after the work of several years, the death rate from snake bites in India seems not to have been reduced. As a matter of fact, complete extermination of snakes is impossible, unless all traces of jungle, forests, rocks, marshes and other haunts are removed. Moreover, the destruction of poisonous snakes can never be achieved in agricultural countries, primarily, because such snakes feed chiefly on rodents, the number of which increases with the development of agriculture, and, secondarily, because both snakes and rodents follow the very well-known biological law applicable to all animals, that is, the more they feed the more young they bear.

2. Capturing live snakes seems to be a much more successful method of combating snake bites, because by taking away poisonous snakes from their habitat, we automatically remove one danger; and also by keeping the snakes alive, we can secure a supply of venom that may be used in the preparation of Antivenins or anti-snake-bite serums. This has been done in Brazil for over twenty years, and on a small scale in this country since the summer of 1926, with very encouraging results.

One can capture live poisonous snakes by using a wire hook, a leather lasso or even a forked stick made, for instance, of a branch of a tree. The wire hook, which is adapted to the end of a long pole, must be thick enough not to bend while pressing the head of the snake against the ground. By pressing the snake head tightly, we can grasp it

by the neck and put it into a sack, bag or box in which to transport it.

The leather lasso consists of a leather loop that slides freely through a metal keeper which is adapted to a long pole, the opening of the loop being guided by a long piece of wire operated by the capturer of the snake. The way venomous snakes coil, upon being disturbed, helps their capture, as, after coiling, they put up their heads towards the person approaching them. At that moment the operator can easily make the snake head come into the loop, and, as soon as this is achieved, he can tighten the loop around the neck and then lift and place the snake in a box or bag or some other receptacle, in which to send it to a place where it can be made use of.

The Antivenin Institute is glad to receive any venomous snakes that may be sent to it to be used in the preparation of Antivenin. At the Central Laboratory, as well as at the various Stations of this Institute, the venom is extracted from all snakes received and purified in such a way as to be used in the immunization of animals from which we secure the curative serum.

3. Raising animals that feed on snakes is a method that never succeeds in practice. A few of the Lesser Antilles have imported the Mongoose with a view of exterminating the local snakes. This animal, although clever enough to escape being bitten, is perhaps more fond of poultry than of snakes, so that it has of late become a nuisance to the countries that have imported it.

The raising of snakes that kill other snakes (ophiophagous species) is a still less satisfactory method on account of the difficulties involved. Such species as the Black snake **(Coluber constrictor)** and the King snake **(Lampropeltis getulus)** that are known to be fond of other snakes, are of no avail in practice on account of the fact that they usually find something else to feed on. In this respect, it can be said that whenever people have tried to break the rules or change conditions of Nature, the results have not always been encouraging.

2. Specific treatment of snake poisoning

In regard to the administration of Antivenin, in case of snake bite inflicted by North American snakes, the Antivenin Institute of America recommends the following treatment.

If you do not have the Antivenin with you, everything depends upon carrying out the following procedure (1 and 2) promptly.

(1) Apply a ligature or tourniquet above the bite. This should be applied tightly at first, but must be partially released for a few seconds at five to ten minute intervals so as to maintain the necessary circulation in the limb. There is no particular advantage in making an incision nor in applying permanganate of potassium solution or crystals, or any of the other chemical agents commonly recommended for this purpose.

In fact, it is advisable to avoid any further mutilation or injury of the affected tissues, especially because, should the wound not be kept properly dressed until complete recovery, tetanus or other secondary infection might set in and complicate the patient's condition. In regard to potassium pernanganate, it has been shown that, in order to have any effect on the venom, this substance must be used in concentrations that are injurious to the tissues. It has no effect in weak solution and is in itself toxic if used in strong solutions.

Above all, avoid the use of alcohol or any stimulant of that kind. These by strengthening the circulation, may tend to help the distribution of venom throughout the body. Strychnine or caffeine however, may be used if symptoms of weakness and giddiness develop.

(2) Proceed at once to the nearest place where the Anti-Snake-Bite Serum and medical attention can be obtained.

Remember that the North American snake venoms are usualy slow in acting and that, if the Antivenin can be obtained within 12 to 24 hours after the bite, the chances of its being effective are good. Of course, the earlier it is used, the more completely effective it is, and the quicker the recovery from the ill effects. Meanwhile, the ligature or tourniquet should be kept in place, but care should be taken to release pressure at intervals. Otherwise, congestion in the limb due to prolonged binding may favor initiation of gangrene. Release the tourniquet as soon as the serum is injected.

If Anti-Snake-Bite Serum is available at the time of the accident, do not apply tourniquet or bandage, but proceed immediately as follows:

The serum for the Nearctic Crotalidae (rattlesnakes, copperhead and moccasin) is a concentrated Antivenin. It is now supplied in North America in 10 c.c. syringes, with a needle and accessories, (all sterilized and ready for instant use.

The Antivenin can be self-administered if necessary, in the same manner as a diabetes patient treats himself with Insulin. Injections may be made under the skin of the thigh, or, preferably, on the side of the abdomen, if applied by the victim himself. They should be given under the skin of the

back, between the shoulders, if applied by some one else.

If the serum can be given at once or within the first hour or two after the bite, a portion of the syringe contents (2 to 3 c.c., for instance) should be given by subcutaneous injection locally around the bite. This tends to prevent local destruction of the tissues. In late treated cases the local application is probably of little avail.

If medical aid is available, intramuscular injections are preferable, in order to hasten the absorption of the serum, and in cases seen late and those in which the symptoms are severe, intravenous injection is advised.

Dosage—As each syringe contains 10 c.c. of the Antivenin, inject the entire contents in one dose. The relation of the age of the person bitten to the dosage, is just the reverse of the usual rule for dosage. The amount of venom injected is the same whether a child or an adult is bitten. **The smaller the individual the greater the need of the Antivenin.** The syringe contains enough Antivenin to protect against the average amount of venom secreted at one time by North American serpents. **Where there is reason to believe that the poison injected by the serpent was of unusually large quantity, or when the symptoms develop quickly and in severe form, as, for instance, in children, it is advisable to give a second, third, or even a fourth dose if indicated; that is, if the first has not caused the symptoms of poisoning to subside. In all cases the patient should be watched for three to five hours after every injection, and if his condition has not improved within that time, a second injection should then be made.**

Final remarks.—The snake-bite problem is distinctly a rural one and is assuming more and more importance in the United States, with the development and extension of agriculture and with the increase of touring, camping and other phases of outdoor life. Not only agriculturists, tourists, campers, hunters and fishermen, but also those engaged in railroad and other construction work, and in quarries, are definitely exposed.

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SUMMARY

By COL. M. L. CRIMMINS
Fort Sam Houston, Tex.

(In addition to the foregoing article from the Bulletin of the Antivenin Institute, the following summary has been furnished, from memory, by Col. M. L. Crimmins, of Fort Sam Houston, the Texas representative of the Antivenin Institute, who was present when Dr. do Amaral gave the talk before the El Paso County Medical Society.)

Dr. do Amaral laid particular stress on the fact that snake bites were becoming more common as poisonous snakes increased with agricultural development, as their food supply increased and their natural enemies decreased. Hawks, road runners or chapparal cocks, and javelines keep the poisonous snakes thinned out, as do Indigo snakes. I also know that badgers will kill and eat snakes; skunks in South America will do the same, and many do here. The rattlesnake is our slowest snake and is, therefore easiest to catch. The Indigo snake is immune to the venom; their thick plates are not penetrated by the rattlesnake's fangs. In one instance observed, it took an Indigo snake six minutes to swallow a small rattlesnake, but it made no attempt to resent the bites of two large rattlesnakes.

With cleared fields, the rattlesnakes are more concentrated. They die quickly in the hot sun, so they always seek cover. I have lost many snakes through their being left in tin collecting cans for twenty minutes in the hot sun, and lost five when they were displayed in a drug store window, and when the sun shone on the window from about six-thirty to seven-thirty a. m. With cultivation, rodents increase and with increased food supply they multiply more rapidly. Seventeen rattlesnakes were killed in filling in an old latrine at Camp Travis a few years ago and eleven more in chopping down an old hollow apple tree at Fort Sam Houston. In 1926 I know of nine being killed within the city limits of San Antonio.

The clothing absorbs about eighty per cent of the venom of the bite, and when serum was scarce we did not ordinarily use it for those bitten through the clothing. It is absorbed very rapidly when the bite is in a vascular part of the body. A dog will die in thirteen minutes when the minimum lethal dose is injected in the tail, even when the tail is cut off close to the body within eight minutes after the injection of the venom.

It should be remembered that children

should be given larger doses of serum than adults. The serum now made at the Mulford Biological Laboratory, Glenolden, Pa., is about three times as powerful as that made before and ten c.c. of serum should neutralize about 50 mgm. of venom. The average amount of venom in a single bite is about 220 mgm. The action of the venom is to prevent the blood coagulating and therefore the free bleeding washes out a part of the venom. If the dose is 220 mgm. and the system eliminates 50 mgm. and the syringe of antivenin neutralizes 80 mgm., the patient would have to eliminate 90 mgm. in order to recover. This may occur through the blood washing out the venom; the absorption may be retarded by a tourniquet, or the hemolytic substances caused by the action of the venom on the tissues may be removed by mechanical suction. Dr. do Amaral, however, believes in the exclusive use of the antivenin. But as antivenin is not always available, and as it costs about ten dollars a syringe, it is not always practical to use it. So, other methods should be studied and used to increase the elimination of the venom. We have personally used mechanical suction as a first aid treatment and in many cases we have succeeded in extracting enough of the venom in its various forms to make the use of antivenin unnecessary. We have furnished serum in about eighty cases free of cost to the patient, as they were usually poor people who were working in the fields bare-footed.

After the venom is in the blood, antivenin is the only substance that can neutralize it. We carried on 117 experiments with live dogs, and all the various drugs were ineffective. A fuller report of these experiments may be found in the July, 1927, issue of the Journal of the Texas State Medical Association, published at Fort Worth, Texas. My lecture read before the State Medical Association is in the same number of the journal.

Dr. do Amaral used the antivenin locally when he was bitten on the finger; by injecting it around the bite he made a neutralizing wall which stopped the further absorption of the venom and he was able to drive his car home as usual. It should be remembered, however, that the flesh will not absorb the serum around old bites where the swelling is extensive, so that intravenous injections are indicated in severe cases showing neurotoxic symptoms.

MIDDLE-EAR DISEASE IN INFANCY AND CHILDHOOD

DUDLEY FOURNIER, M. D.
Phoenix, Arizona

(Before the Staff Meeting of St. Joseph's Hospital, Phoenix, on March 12, 1928.)

By far the most dangerous period for the ear during one's lifetime is that period of infancy and childhood. It is during this time that middle-ear infections are so common and it is extremely important that the pediatrician have some knowledge of normal and abnormal ears. Any physician who has the care of children in his practice, should routinely examine the ears. The most frequent form of ear trouble in infancy and childhood is middle-ear disease and the diagnosis is based on changes found on inspection of the drum membrane.

The most important exciting cause is the common cold in the head, and most middle-ear diseases can be traced to this cause. Pain at the onset is a conspicuous symptom, although in numerous cases in young children there seems to be a total absence of pain. Elevation of temperature is almost invariably present and there is some deafness. The appearance of the drum membrane is quite characteristic. It is congested, with an obscuring or obliteration of the normal landmarks, especially the light reflex and the handle of the hammer.

Case 12917 is one of this type. This child is fifteen months old. She was admitted to the hospital having frequent convulsions, with a temperature of 106. Examination showed she had a lobar and bronchial pneumonia. She was given 1 c.c. of catarrhalis immunogen every twelve hours. She progressed very favorably for a few days, when she again had a sudden rise in temperature. She was crying almost continuously, pulled at her ears and was very restless. On examination of the ear, the membrane was found to be inflamed and slightly bulging. She was taken to surgery and a paracentesis performed under gas anesthesia. She improved very nicely for a few days, when she again had a sudden rise in temperature. This time I got a specimen of urine and found it was loaded with pus. The ear drums were again incised and the pus in the urine cleared up considerably. After the child went home she had another convulsion with temperature rise. The urine examination showed hundreds of pus cells per high dry field. The ears on this examination showed inflamed and bulging drums. These were again incised under gas anesthesia, and discharged freely for several days. The urine has since cleared and the child has made an uneventful recovery.

The next case will illustrate the early opening of the ear.

Case E. N. H., male child eighteen months old. Father and mother both well. Child was breast fed to the eighth month. Three weeks previous to the time I saw him he developed pain in the right ear. The next trouble was a bloody diarrhea. Stools were accompanied with much tenesmus and were as frequent as ten or twelve times a day. The physician in attendance, not suspecting middle ear disease, treated the diarrhea with no results When I saw the patient, he was very much emaciated,

the skin was dry and temperature 101. On examination, I found the ears to be inflamed and bulging. I advised an immediate paracentesis. This was done and a thick creamy pus exuded for several days. The pus, upon microscopic examination, was principally pneumococci and streptococci. The stools became normal two days after the drums had been incised.

As a rule, acute serous middle-ear infection lasts from a few days to ten days at the most. Usually, it clears up in a week's time. In some cases, permanent changes take place, as diminution of luster and thickening of the membrane. The treatment in the acute serous conditions is usually conservative at the beginning. Five per cent carbol glycerine will quiet the pain and the application is usually very beneficial and hot moist dressings may be even more effective. In doubtful cases, it is always better to perform paracentesis, and the after treatment should consist only of frequent changing of cotton pledgets placed into the external meatus. The ear should not be irrigated but the application of heat will facilitate drainage.

Acute middle-ear suppuration is very common in childhood and is usually an extension of an acute infection in the nasopharynx. The child has a severe earache with elevation of temperature often to 104 to 105. In older children marked defect in hearing is demonstrable. The process usually advances to rupture of the membrane. The disease may run a course of from two to three weeks, and the initial course, before rupture of the membrane, may be from a couple of hours to several weeks. As a rule, spontaneous rupture takes place in from two to three days. The treatment consists in early paracentesis and I believe the earlier it is done, the better. As soon as I see a bulging membrane, I do not fool around with carbolic acid and glycerine but advise an immediate opening. And by doing this I believe I prevent more serious complications.

In very young infants—that is, those before the third and fourth month—the only symptom present may be fever. And for this reason I want to emphasize again the routine examination of these youngsters' ears. The symptoms disappear quickly after drainage through the drum membrane has been established. Great care should be taken in keeping the meatus cleansed, as an eczema is likely to develop owing to the sensitiveness of the baby's skin.

PRENATAL CARE AND ITS RELATIONSHIP TO THE REDUCTION OF FETAL AND MATERNAL MORTALITY

D. FOURNIER, M. D.
Phoenix, Arizona

(Read before the Maricopa County Medical Society March 19, at Phoenix.)

Motherhood has so long been taken for granted and for so many years has received such inadequate attention because of its supposedly natural and normal course, that the public has not been made aware of the really serious conditions that are very commonly seen during pregnancy and labor.

It has been only in very recent years that the great value of prenatal care and its influence in reducing fetal and maternal mortality have been told the laity and practiced by the physician.

This country, in spite of the fact that the people on the whole are well educated and healthy, has a shockingly high maternal and infant mortality. A few of the factors which explain this state of affairs are ignorance amongst a certain proportion of the people, indifference, poverty, unsupervised medicines and imperfectly prepared physicians.

During the past half century, the death rate in the country has been lowered very appreciably, but little progress has been made in reduction either in the number of deaths from parturition or in the amount of partial or complete invalidism resulting therefrom. The two outstanding causes of this high maternal death rate are first, sepsis; second, toxemia of pregnancy. Despite the many efforts that have been made to improve the technic of delivery, sepsis still remains the greatest danger that the parturient has to face. In figures compiled by the Metropolitan Life Insurance Company, they show that 42 per cent of maternal deaths are due to sepsis and 26 per cent to toxemia. In 1921, according to the United States census, the causes of maternal deaths were as follows:

Sepsis—40.3 per cent.
Albuminuria and eclampsia—26.8 per cent.
Accidents of pregnancy—8.4 per cent.
Puerperal hemorrhage—10.2 per cent.
Other accidents of labor—10 per cent.

One of the most puzzling features of sepsis connected with childbirth is that it frequently is seen in absolutely normal cases and in those where there has been no internal examination during or before labor. Recent intercourse is unquestionably responsible for many of these infections.

Prenatal care, unfortunately, cannot per se affect the sepsis rate, but it can educate the parents to demand better care at delivery. Prenatal care will fall far short of giv-

ing satisfactory results unless better care is given both mother and child during labor.

Organized prenatal care, so far, has not made any reduction in the number of abortions and premature infants, one of the reasons for this being that patients are not seen early enough in pregnancy and then are not seen often enough. The earlier prenatal care starts, the better will be the results. The statistics for New York state show that one-fourth of the deaths in children occurred before they were a day old and one-half before they were two weeks old. This makes it clear that the dangers to the newly born child are greatest immediately after birth.

Prenatal care has shown its most brilliant results, so far, in regard to maternal mortality up to the time of labor, in the toxemias, and chiefly the toxemias with convulsions. Just to illustrate, in seven years at the Bellevue Hospital in New York City, there were 16,600 admissions and of this number there were ninety-two cases of eclampsia and of these ninety-two cases only four developed among those who had received prenatal care. Likewise, if all cases of bleeding during pregnancy are taken seriously and prompt attention is given, most deaths from hemorrhage—whether from accidental hemorrhage or from placenta praevia—can be avoided.

If it is possible to get the people in the community educated to the value of prenatal care and better care at delivery, the needless sacrifice of life from sepsis can be at least partially wiped out, so that the present gross maternal mortality may well be cut in two. By the recognition of syphilis and treatment thereof, a very great improvement can be made in those suffering from lues. The earlier the prenatal care and the more carefully it is administered, the fewer will be the number of cases of abortion and premature labor.

Prenatal care affects both mother and child. It is chiefly preventative in nature and its success depends upon the zeal and skill of the physician in charge. For prenatal care to be completely successful, it is desirable that the patient have a thorough examination early in pregnancy and that she return at stated intervals. The physician should detect any condition liable to be aggravated by pregnancy. He should detect any pelvic abnormality and existing gonorrhea or syphilis. He should try to prevent abortion and premature labor and recognize early any toxemia and treat it correctly, and he should deliver the woman safely at or near term.

It should be the effort of the physician to have the expectant mother apply for examination and advice as early as possible in pregnancy. This is not said in a spirit of over cautiousness, but in the definite belief that the early and constant supervision of every expectant mother is the only way you can get her through to term with any degree of safety. Many women go through their pregnancy without any care whatsoever but, because ninety-nine escape, there is no reason why the woman should be neglected. The physician who really cares for his patient should take obstetrics more seriously and, if he has not the time and patience to do this, he should refer her to someone who is willing to devote the time to her. Every woman should see her physician once in three weeks for the first five or six months and then to term, every two weeks, or more often if the condition warrants it. The usual routine which I follow is: Upon first seeing the patient, a complete physical examination is made. This includes the head, neck, heart, lungs, breasts and lower extremities. Then the pelvic measurements are taken, together with a pelvic examination. If there is anything suspicious, I take a vaginal smear or have a Wassermann done. On each subsequent visit, the blood pressure is taken and the urine examined and, in the last six weeks, another careful internal examination is made in order to verify the relationship of the fetus to the pelvis. Another examination of the pelvic organs is made a month or six weeks after delivery.

ANESTHESIA IN OBSTETRICS

F. C. JORDAN, M. D.
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(Read before the Maricopa County Medical Society, at its meeting of March 19, at Phoenix.)

From earliest times, there are many records of drugs and other means used to alleviate the sufferings of childbirth. Sir James Young Simpson was the first to really accomplish this, when, in 1846, he began to use ether in obstetrics and, shortly afterwards, introduced chloroform. He met with much opposition from the clergy, his opponents, claiming that its use was against the laws of nature; yet, it gradually grew in favor until now there are very few obstetricians who do not use some form of anesthesia or analgesia.

Chloroform has been used more in the past, but lately ether is more widely used because of its greater margin of safety. Neither chloroform nor ether is suitable for the first stage of labor, but they are often used in the last part of the second stage.

Ether is unpleasant to take, irritates the bronchial mucous membranes, is not very

rapid in action and is often followed by nausea and vomiting. Chloroform lowers the blood pressure, is not unpleasant to take, acts quicker than ether, and causes less nausea and vomiting. It is more dangerous than ether, must be watched very closely and is said to have a degenerating effect upon the liver.

Potter of Buffalo, in his clinics, uses chloroform exclusively in all his obstetrical cases except the cesarean sections; in these, he uses ether. He claims a more perfect relaxation with chloroform but insists that it be given by a trained anesthetist.

DeLee is unalterably opposed to chloroform and uses ethylene and ether. Local anesthesia is used almost entirely in cesarean sections. Ethylene is used when there is lack of cooperation.

Webster and Lunch, in 1913, popularized the use of nitrous oxide in obstetrics. It is probably the safest anesthetic for both the mother and child and can be given intermittently over a period of several hours. It is pleasant, acts quickly, does not lengthen labor. Its main disadvantage is that it requires quite a bulky apparatus and a trained anesthetist; also, there may not be sufficient relaxation in some cases.

Ethylene has replaced nitrous oxide in many hospitals. It is slightly more unpleasant to take than nitrous oxide. It acts quicker, gives more relaxation. It is quite explosive and must be given by a trained anesthetist.

Morphine and scopolamin, or "twilight sleep" anesthesia, was extensively used by Gauss of the Freiburg clinic. In 1913, he reported a series of 3,000 cases with excellent results and a very low infant mortality. The wide publicity these reports received in the McClure's and other magazines, decreased rather than increased the popularity of this method. There is no doubt much merit in the combination of morphine and scopolamin and a number of successful reports have been published by some of our large obstetrical clinics.

The following technic is used in Bill's clinic in Cleveland: The primipara is the patient of choice. When the first stage of labor is definitely started, that is, when the contractions are occurring regularly from seven to eight minute intervals, the patient is shaved and given an enema. She is given a subcutaneous injection of ¼ gr. morphine and 1/150 gr. scopolamin hydrobromide. All relatives are barred from the patient's room, which is darkened, and a nurse is directed to see that external stimulation be avoided. Forty-five minutes later, 1/400 gr. of scopolamin is injected. The morphine is never repeated after the first dose. After forty-five minutes, 1/400 gr. of scopolamin is given again and 1/400 gr. may be given at 1½ hour intervals, if needed. A small amount of ether is given at the end of the second stage.

Schwartz and Krebs, of St. Louis, attempt to keep the patient in that narrow zone of semi-narcosis by giving sufficient scopolamin to cause her to lose locomotor coordination, which is shown by her inability definitely to touch her nose with her extended finger, but not enough to prevent the pupils from showing their usual dilation at the height of contraction. The keeping of the patient in this zone constitutes scientific semi-narcosis. They also give small amounts of ether, chloroform, or nitrous oxide gas, to complete the anesthesia for the delivery of the head. Schwartz and Krebs state that this form of anesthesia is contra-indicated in uterine inertia, and must be used with great care, if at all, in cases of eclampsia, placenta praevia, and heart diseases complicating pregnancy; also, that this method is not adapted to use by the general practitioner, nor to the ordinary home. If used by trained obstetricians in a well equipped maternity hospital, satisfactory results will be obtained in about eighty to ninety per cent of the cases. Intense excitement, and sometimes delirium, is produced in some cases, and may be very disconcerting to the physician in charge. Lately, they have been using magnesium sulphate in conjunction with the scopolamine, with very promising results.

Dr. J. T. Gwathmey of New York, commenced, 1923, to experiment in the synergistic action of analgesics and anesthetics. He used morphine and magnesium sulphate hypodermically and, later, an oil retention enema containing quinine and ether. This method is probably used more than any other except ether and chloroform.

Gwathmey's technic is as follows: The patient is given the usual preparations for labor except that, instead of the cleansing enema, a colonic flushing is given until the water returns clear. When the labor pains are regular at four or five minute intervals, an intra-muscular injection of 1/6 gr. morphine and 2 c.c. of a 50 per cent magnesium sulphate is given. If there is not a decided sedative effect within twenty minutes, a rentention enema consisting of quinine hydrobromide 20 gr., alcohol 3 drams, ether 2½ oz. and sufficient olive oil to make four ounces, is used. This is given slowly through a large rubber catheter. It may be given by gravity, or a large bulb or piston syringe may be used. This is given with the patient lying on her left side in Sims' position. A folded towel is pressed firmly against the

perineum for ten to fifteen minutes, to prevent expulsion of the enema, and the patient is given instructions not to bear down. There should be a decided relief from pain in from fifteen to twenty minutes. If the pains increase, another 2 c.c. of the 50 per cent magnesium sulphate is given, but the morphine is never repeated after the first injection. As many as four hypodermic injections of magnesium sulphate may be given, but at intervals not closer than 30 minutes. If the labor is prolonged, the retention enema may be repeated in four hours. The patient must be closely watched, for labor may progress much faster than is expected. Usually, it is necessary to give some additional anesthetic for the last few pains.

Gwathmey states that: first, the method is safe; second, the pain is relieved in some measure in over 90 per cent of the cases; third, labor is not delayed; fourth, occipitoposterior positions rotate in about the same proportion as those without medication; fifth, the baby is usually born crying; sixth, delivery by forceps is decreased; seventh, post partum contraction of the uterus is good.

Morphine should not be given in any case if delivery is expected within three or four hours.

Somniferin has been used quite extensively in France in the last few years, with very good results. The only disadvantage reported was an extreme agitation with each pain, that necessitated holding the patient in bed and rendered examinations difficult. From 6 to 9 c.c. of somniferin are given intravenously, which usually produces sleep within fifteen to twenty minutes, and there is usually complete amnesia following delivery. Labor is not delayed and it is not deleterious to the child.

Sacral and spinal anesthesia have their field of usefulness, but have not been used extensively because of the danger of cardiac and respiratory paralysis, and the technic requires more than ordinary skill.

Every pregnant woman has a right to demand that some method be used to help relieve the pains of childbirth. Until some safe and satisfactory anesthetic is found that can be universally used, a careful study should be made of each case to determine the type of anesthesia that will be safe for both mother and child.

BOVINE TUBERCULOSIS

WM. BRANCH, M. D.
El Paso, Texas

(Read before the El Paso County Medical Society, Monday, February 13, 1928.)

Probably no disease, affecting either the human race or livestock, is better known or has been the subject of so much study as tuberculosis. Present knowledge of the disease has been derived from many sources. The President of the United States, in his message to Congress[1], called attention to the importance of eradicating bovine tuberculosis. He said: "The eradication of bovine tuberculosis is a measure of great economic importance. Work is being done in one-fourth of the counties of the United States to secure this result. More than 12,000,000 cattle have been under treatment; the average degree of infection has fallen from 4.9 per cent to 2.8 per cent." In his budget the sum of $5,853,000 is included for the eradication of bovine tuberculosis, this being an increase of $1,200,000 over the previous year.

EMBARGO AGAINST INFECTED MILK

The continued increase in the number of cities which have placed embargoes against milk from dairy herds which have not passed tuberculin tests, is placing a heavy burden on the owners of dairy herds, since slaughter of infected animasl is the accepted method of eradication.

AN ARTICLE OF FOOD

Kiernan[2] said that meat is considered an almost negligible factor in the transmission of bovine tuberculosis to human beings, the principal means being the raw milk of the tuberculous cow. In every land, in every generation, and from a very early period, the human race has endeavored to make safe for human consumption meat and other food products. In ancient times the Egyptians in their food laws designated certain animals —the hog, for instance, as unclean and forbade man to eat of them. This prohibition was accepted by Semitic races, and was incorporated in the Mosaic laws of the Israelites; but the Greeks and the Romans had no prejudice against pork in their control over the meat supply. The Mohammedan food regulations of today are similar to the Egyptian food laws of ancient times.

PERIOD OF INCUBATION

Kiernan found that animals recently infected will react to tuberculin before any pathological change has taken place in the tissues. The period between the introduction of the organisms and the sensitization to the tuberculin may be only a week. The time required for the development of lesions varies greatly in different animals. A tuberculous cow placed between two tuberculosis-free cows, will usually infect both her neighbors. At post mortem one of the animals will often show a slight infection, while the other may show a generalized case of tuberculosis.

CONGENITAL TUBERCULOSIS

From one abattoir alone post mortem re-

ports were received indicating generalized tuberculosis in thirty-six calves, the ages being given as follows:

1 calf less than twenty-four hours old.
1 calf one day old.
1 calf 10 days old.
12 calves one week old.
14 calves three weeks old.
5 calves three weeks old.
2 calves four weeks old.

In the last four or five years many cities and towns have adopted ordinances requiring that all milk sold in their jurisdictions must come from tuberculin tested cows only. Such cities as Chicago, Cleveland, Detroit, Louisville, Boston, and scores of others require the tuberculin test. There are 874 cities in the United States that require tuberculin test of all cows from which milk is used; 375 cities provide an option between tuberculin test and Pasteurization.

IMMUNITY

The statement has been made that the ingestion of the bovine tubercle bacillus confers immunity against an infection by human tubercle bacilli, and that an infection by the former might be used in combating an infection by the latter. Dr. Schroeder[3] of the Bureau of Animal Industry, in discussing the matter, took the position that this should be definitely proven, and that only after it has been positively proven, and not before, may we consider the propriety of permitting children to ingest bovine tubercle bacilli, and then not indiscriminately, but in carefully measured, numbered and timed doses of a carefully determined degree of virulence. Science demands precision, exactness and care, especially when children are to be treated with possibly beneficial agencies which, when used carelessly or inaccurately, are known to cause disease and death.

Raw[4] secured from Professor Calmette a virulent bovine culture from the mesenteric glands of a cow. These cultures were subcultured on glycerin-potato and transplanted to glycerin-agar every month for twenty years. The present growth, at the writing of his article, February 26, 1927, was the 241st generation. Every year since 1906 he injected these bacilli into animals with a view of testing their pathogenicity; up to 1913, at the 84th generation, he noticed no change in their virulence, but after that time attenuation became marked, and in a series of these inoculations into animals in 1914 they were observed to be avirulent. These experiments prove that virulent tubercle bacilli can be attenuated to such a degree as to be a virulent. Hundreds of animals were inoculated to test the power of immunization of healthy animals, and with excellent results. Calves that are to be immunized should be separated from the mother at birth and fed on healthy milk for a week, when the first dose of vaccine is given; one week later the second dose is given, after which they are allowed to associate with the herd. During the last four years over six hundred calves in valuable pedigreed herds have been vaccinated by veterinary surgeons. Tuberculin tests at intervals of six months have so far been satisfactory; the duration of immunity in one hundred and twenty calves has been over three and one-half years. The problem of tuberculosis resolves itself into the question of immunity. The question of immunizing children is much more difficult, for the reason that children are susceptible to both human and bovine infections. Raw vaccinated more than one hundred children (each child's father had pulmonary tuberculosis); he gave each child two doses of protective vaccine, prepared from dead attenuated bovine bacilli in an attempt to protect them from human infections; so far they are healthy.

THE FREQUENCY OF BOVINE TUBERCULOSIS

Rosneau[1] indicated that pulmonary tuberculosis in man is practically never associated with the bovine bacilli. Bovine tuberculosis in man is usually a disease of the lymph glands or bones, the lymph nodes of the cervical region and the lymph nodes in the abdomen being especially attacked. Griffith analyzed 1,068 cases studied by the British Commission on Tuberculosis. Of this number 803 showed human bacillus infection, 194 bovine infection, and five mixed infection. Of various organs involved, the examination showed that bovine infection occurred in the following percentages: bones and joints, 19.7; genito-urinary organs, 17.65; cervical glands, 46.3; meninges, 20; scrofuloderma, 34.65; lupus, 48.9. As to the age period bovine infection occurred as follows: during the first five years of life, 37.55 per cent; from five to ten years, 29.45 per cent; from ten to sixteen years, 14.66 per cent; after sixteen years, 6.25 per cent. Stone[5] said that with the pasteurization of milk and the gradual elimination of tuberculous cows, more and more surgical tuberculosis is proving to be of the human type. The incidence of surgical tuberculosis is being cut down tremendously, but the cutting down has been chiefly in that originating from milk. The surgical tuberculosis of the human type has been cut down much less rapidly. Woodward voices the prevailing opinion when he maintains that the more deeply we go into the subject, the bovine side of the question comes to take a larger and larger place, especially in

connection with surgical and abdominal tuberculosis, not only in the child, but even in the adult.

THE TUBERCULOUS COW

It is estimated that in England about a million dairy cows are affected with tuberculosis. The cows with the udder are of course the most dangerous. The compulsory seizure, isolation and slaughter of these cows is a slow, laborious and very costly procedure. Kiernan stated that more than 34,000,000 had been tested or retested with tuberculin from 1917 to January 31, 1927, and 1,176,626 cattle reacted to the test; practically all of them were killed and autopsied and definite microscopic lesions of tuberculosis were demonstrated in 91.7 per cent, while 26 per cent of the remainder showed definite tuberculosis in the laboratory. With such a demonstration of accuracy of the tuberculin test, are we not justified in classifying every animal that reacts to tuberculin an infected beast? Because of the interstate shipments of milk and dairy products, it is quite proper for the Federal government to cooperate with the state or municipality, to the end that this great food supply be protected. All of which brings home again and again to the dairyman the necessity of immunization of the young calves for the prevention of tuberculosis, if he would stay in the business.

THE MILK OF THE TUBERCULOUS COW

All milk, where there is any question as to its purity, should be pasteurized. Pasteurization of milk at 140 degrees for 40 minutes will kill the tubercle bacilli. Pasteurization is not intended to make a palatable article of food out of something that is otherwise wholly unfit for human consumption.

DIAGNOSIS

Pottenger[7] avers that bovine tuberculosis cannot be differentiated from human tuberculosis, microscopically. Neither can it be differentiated by character or localization of lesions. Any bone, joint, or gland lesion, in a small child, should arouse the suspicion of the physician.

TREATMENT

Every child that is suffering from a bone, joint, or glandular lesion, or who is under weight, size, or strength; every child that lives in a home where there is an open case of tuberculosis; and all anemic children among the very poor, should be taken to a preventorium, provided that no child be taken away from parents who are morally willing, or financially able to properly care for the physical development of the child. Geer[8] said that of the 223 children that had left the institution of which he had charge, since 1915, all but seven had been accounted for. Of the 216 whose whereabouts were known, only two had developed tuberculosis, one of whom had died. Stiffler, who worked with Geer in the Ramsey County Preventorium, found twenty-eight who could qualify for admission to a school for the feeble minded, out of seventy-five children recently admitted. He further stated that the children who failed to gain physically, as a rule, stood lowest mentally. Ritchie[9] advises that the Prendergast Preventorium of Hampton County, Mass., has contributed to the state hundreds and hundreds of able-bodied men and women, who as children were taken from the slums and tenement districts. The record of the institution can be had for the asking.

CONCLUSIONS

(1) That bovine tuberculosis is a preventable disease, and as such, should be prevented.

(2) Every infected child that cannot or will not get a satisfactory physical consideration at home, should be sent to a preventorium.

(3) Every dairy calf should either be slaughtered or immunized.

(4) Every cow should be tested, regardless of whether she gives milk or not, or whether her milk is sold or not.

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MALARIA IN EL PASO

P. R. OUTLAW, M.D., City Health Officer.
El Paso, Texas.

From a public health standpoint, the etiology of malaria is of great importance. It is important to know something of the nature and habits of the mosquito, as the malarial parasites live only in the body of man and certain species of mosquito. The climatic conditions of El Paso are unfavorable to malaria, as contrasted to the low, swampy, rainy country which is more favorable to the production of mosquitoes.

Since the construction of Elephant Butte dam, more and more of this valley land has been brought into cultivation and irrigation, the breeding of mosquitoes has greatly increased, and this, coupled to the fact that this soil was found to be an ideal place to produce cotton, has made it a very attractive place to people living in the cotton growing section of the south where malaria abounds. The migration of these people, many of whom are carriers of malarial parasites, has served to furnish infected blood for the mosquitoes and through them to spread the disease to others.

A routine examination of thirty thousand people in Mississippi showed seventeen per cent of the white and twenty-two per cent of the negro population to be infected with malaria, or a total of thirty-nine per cent of the population infected.

The season most favorable to the development of the anopheles mosquito is also most favorable for the transmission of malaria, that is, August, September and October. There are three types of malarial organisms and these parasites are reproduced in man in very much the same way. Malaria is carried from one individual to another entirely by the bite of the female mosquito, as the male does not bite. Not all species of mosquitoes are capable of serving as hosts for malarial parasites. Malaria is not inherited, the malarial parasites will not pass from the mother to the fetus, although it has often been found that the maternal side of the placenta is loaded with malarial parasites.

All of the malarial transmitters, so far identified, belong to the Anopheline species, which are about forty in number. Three of the Anopheline mosquitoes have been found in and around El Paso. The Anopheline pseudopunctipennis, is found in great numbers in all parts of the city. Different species of Anopheles have different breeding habits, but most of them require rather clean water protected by vegetation. Natural accumulations of water often contain more Anopheline larva than do artificial containers. The eggs hatch in from two to four days, the larval stage covering twelve to fifteen days, but both of these may be shortened in very hot and favorable conditions. The pupal stage runs from two to four days and from the pupa a full grown mosquito emerges. When the stage of life is reached at which the female mosquito should produce eggs, she goes on the hunt for animal protein. The mosquito will not develop eggs when living on their natural food of plants and juices. After a blood meal is found, ova develop very rapidly. The Anopheles do not travel very far, but will go back and forth from their breeding places to their feeding places. This has been repeatedly proven by spraying mosquitoes with some form of aniline dye and afterward recapturing them. The time required for the development in the mosquito of the malaria sporozoite is from fifteen to twenty days, and mosquitoes are not infectious until this sexual development from the gamete to sporozoite is complete and the sporozoite has found its way to the salivary glands, from which it is injected into the human victim.

METHODS OF CONTROL OF MALARIA

The first is educational. I do not think we can go very far in eradicating any disease until we educate the public to the importance of it, and have their earnest cooperation. A large percentage of people look upon the health officer as one who is constantly trying to deprive them of personal liberties, but wants their neighbors put in jail. I think we should report our malarial cases to the health department for record and for location, so that the mosquito division can make a thorough investigation of the premises and see that there are no breeding places, or take care of them when they are found.

Quinine is a prophylactic, but this depends upon the cooperation of the people. Among people who will cooperate, quinine will stamp out malaria, but quinine should be properly given, as it has been found in malarial countries that small improper doses of quinine will actually increase the number of gametes in the blood. There are some people who are malaria carriers, though not sick themselves, as we have in other diseases like diphtheria, typhoid, etc.

ELIMINATION OF BREEDING PLACES

The water table of the Rio Grande at El Paso makes it impossible to properly drain the ponds of water caused by seepage and this inability to drain these ponds is a constant source of expense on account of having to be re-oiled and watched at all times.

Drainage is one of the most effectual ways of eradicating mosquitoes and one which takes first place in the effort of control.

The use of oil is successful in destroying the larvae but requires re-operation at stated times as the oil evaporates and through other causes loses its efficiency. Stocking the lakes, drainage ditches and pools with fish and minnows is one very effectual way of assisting in eradicating mosquitoes. Clearing land of brush and unnecessary vegetation is important, as

the Anopheles will go to the brush and weeds for protection.

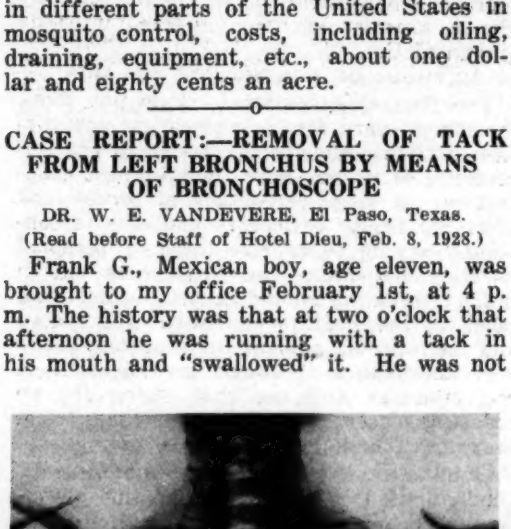
When a doctor finds a case of malaria he should see that the house is well screened, and the patient should order a mosquito net following the first visit of the physician. As the Anopheles feed mostly at night it is at this time that we should take the greatest precaution against being bitten. The greatest and most effectual work done by the United States Public Health Service in different parts of the United States in mosquito control, costs, including oiling, draining, equipment, etc., about one dollar and eighty cents an acre.

CASE REPORT:—REMOVAL OF TACK FROM LEFT BRONCHUS BY MEANS OF BRONCHOSCOPE

DR. W. E. VANDEVERE, El Paso, Texas.

(Read before Staff of Hotel Dieu, Feb. 8, 1928.)

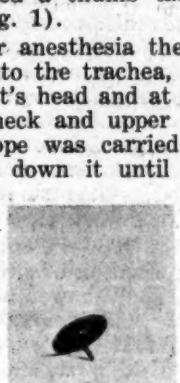
Frank G., Mexican boy, age eleven, was brought to my office February 1st, at 4 p. m. The history was that at two o'clock that afternoon he was running with a tack in his mouth and "swallowed" it. He was not



coughing nor dyspneic, there was nothing to indicate that the foreign body was in the lung, and it was my belief that he really had swallowed the tack, although that is what is always told the doctor, regardless of whether the tack has been swallowed or inspirated. It seems difficult to realize that there are two tubes leading down the throat, one for food and the other for air, and that it is possible for foreign bodies to enter the air passage also.

X-ray located a thumb tack in the left bronchus. (Fig. 1).

Under ether anesthesia the bronchoscope was passed into the trachea, and by lowering the patient's head and at the same time bending the neck and upper thorax to the right the 'scope was carried into the left bronchus and down it until the tack was



sighted. It was then grasped and brought out trailing the bronchscope. (Fig. 2). The boy was allowed to return to his home the following day and has made an uneventful recovery.

Cases of foreign body in the right bronchus are fairly common and I have removed quite a number from that location. A foreign body of the left bronchus is not so frequent because of the sharp angle at which it leaves the trachea. On the other hand the right bronchus is more of a direct continuation of the trachea with only a slight outward deviation.

PITUITARY HORMONIES

From the research laboratory of Parke, Davis & Co. has recently come the announcement of important work on the isolation of the two distinct hormones of the posterior lobe of the pituitary gland. It has long been known that the internal secretion of this gland had two distinct actions, one upon the blood pressure and the other upon the unstriped muscle, particularly the uterine muscle. Since it is frequently desirable to secure one of these effects, without the other, the accomplishment of isolating these two principles in pure form has great importance in therapeutics. "As a result of this preliminary work the foundation is now laid for an investigation of the chemical nature of the separated hormones of the posterior lobe of the pituitary gland, together with a more exhaustive study of their pharmological properties."

(Jour. American Chemical Society, 50: 573 (1928).

NORTHERN COUNCILOR DISTRICT MEETING ARIZONA STATE MEDICAL ASSOCIATION

The first District Councilor Meeting, as authorized by the House of Delegates of the Arizona State Medical Association, at the Yuma meeting, was arranged by Dr. Wm. C. Todt, councilor for that district, and held in Flagstaff on March 22nd, under the auspices of the Coconino County Medical Society. The honors for this progressive move go to the northern district, and it is hoped the other two districts will not be long in following this example. The following doctors were registered in attendance: A. C. Carlson, Jerome (president-elect of the Association); D. F. Harbridge, Phoenix, (secretary of the association); W. C. Todt, Kingman, (councilor); J. K. Hazel, Jerome; J. M. Walsh, Jerome; H. T. Southworth,, S. O. Bassett and A. D. Loewy, Prescott and Whipple; W. C. Hendrick, Holbrook; Walter Brazie, Oatman; J. W. Bazell, Winslow; John T. Taylor, Camp Verde; C. Matschke, Clemenceau; C. D. Jeffries, Williams; H. J. Harnisch, M. G. Fronske, A. H. Schermann, E. S. Miller, G. F. Manning, of Flagstaff.

The program of the meeting was as follows, with Dr. A. C. Carlson, president-elect of the Association, presiding:

"Organization of the American Medical Association and Its Relation to the State Association and County Society"—Dr. D. F. Harbridge, Phoenix, Secretary of the Arizona State Medical Association.

"Infantile Paralysis"—Dr. M. G. Fronske, Flagstaff. Discussion by Drs. Schermann, Carlson, Bazell, Walsh, Jeffries and Taylor.

"Fractures of Long Bones"—Dr. A. C. Carlson, Jerome, President-Elect of the Arizona State Medical Association. Discussion by Drs. Southworth, Todt, Schermann. Fronske, Harbridge and Hendrick.

"The Milk and Water Supply of a Small Community," was introduced as a subject for general discussion, this being opened by Dr. G. F. Manning, Jr., Health Officer of Coconino County.

The doctors in attendance were entertained at luncheon by the Coconino County Medical Society, at the Monte Vista Hotel.

In the afternoon, the subject for general discussion was "The Medical Profession, the Industrial Commission and the Insurance Carrier." It was opened by Dr. W. C. Todt, and participated in by Drs. Carlson, Harbridge, Bazell, Fronske, Taylor and Schermann.

"The Spirit of Cooperation Among Physicians, and the Impropriety of Injuring the Confidence Between Physician and Patient in Any Way" was discussed by Dr. D. F. Harbridge.

The closing feature of the meeting was the presentation of a Cabot Case History Discussion by Drs. Southworth, Bassett and Loewy, of the Yavapai County Medical Society-Fort Whipple clinical discussion group.

METHOD FOR COLLECTION OF BILLS

Should this be done by the physician himself? We have all tried it and have not succeeded very well so far. Otherwise, the subject would not require consideration.

By the collecting agencies? Opinions vary as to their efficiency. Some say that they do better than the physician himself; others that they do not. At best, they are costly. They want from 25 to 50 per cent commission. Should they collect a half, that would leave but 25 to 37 per cent for the doctor. But do they often do that? Personally, I have tried three of these agencies, one here in Phoenix, no one of which has collected a cent from the patient. I have paid them commission on money that I collected before they had time to reach debtors with their letters.

One method presents itself to me as possible. For that we must return to the physicians themselves, these working together. It is this: Let each one go over his accounts for some years back, and, after crossing out such as he may consider worthy of charity, list all the others, with last addresses and amounts due or not, as may seem best, and send the list to some central office or secretary. Here the names will be put together alphabetically, each with the names of all the doctors to whom they are indebted. The secretary will then send a copy of this list to each of the doctors entering into the system. Each of these should furnish the secretary with a monthly list of collections. She can then inform the doctors whenever an account has been paid. These lists can be renewed as frequently as the number of payments may require.

Notice of this plan might well be published in the local papers. This would lead to a goodly number of the accounts being paid so as to keep names off the list. The amount of work required of the secretary would diminish after a time and would not be costly.

Suppose one receives a call by day or night. He asks the name, looks over his list, and then says "You owe this, that, and the other doctor. What about the money for this call?" On receiving payment, he might suggest that they pay some on the other doctors' accounts before they call again.

Would this system be hard on the poor? Is it not easier for a family to lay up money for an emergency than to pay it afterward, when, perhaps, the wage earner may have died? Many of these cases are obstetrical, in which they have had eight months warning of what was to occur. Many of those who owe doctors are not poor. They can dress well, travel, buy a new house, a new automobile occasionally and enjoy life generally.

During eight years of practice in Mexico and the Philippines, where the people were much poorer than here, I collected 96 per cent of what I charged, and did much less charity work than here. The people scarcely ever asked for charity and some even refused it when offered.

The Official Bulletin of the Chicago Medical Society of June 2, 1923, mentions a plan already in service by which a doctor may be informed beforehand as to whether the proposed patient has paid his medical bills. The plan is favorably discussed in the Journal of Clinical Medicine of July.

CARLOS FATTEPERT, M. D. Phoenix, Arizona

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A COMMENDABLE EXAMPLE

The editor, in his capacity as member of the Program Committee, has been told by the Tucson members of the committee that it is their desire to hold their smoker without the customary alcoholic embellishments. Since this made it unanimous, so far as the Program Committee is concerned, we take it that Pima County will set the balance of the state a worthy example this year. We believe, therefore, that we can express our sentiments on this question without giving offense to any one.

It is a peculiar, and not very commendable, circumstance that when it was entirely lawful to serve alcoholic drinks, the Arizona State Medical Association refrained from doing so. Since it has become unlawful to transport, buy or sell alcoholic drinks, the Association has become a deliberate and wilful lawbreaker, a matter in which we can take no pride. It may be argued that this has been the tendency of many people in the United States; this may be true with respect to some unbalanced juveniles, a great horde of lawless foreigners who have no respect for this or any other country, and a few otherwise respectable Americans. However, that is no excuse for such an organization as the Arizona Medical Association, or any constituent county society which stands for law and order, conniving with lawbreakers to violate the federal and state laws. We can recall the last meeting held in Tucson (Medical & Surgical Association of the Southwest), and the smoker on the roof of the Santa Rita Hotel. Many present at that meeting are not able to recall the later events of the evening, having been so far gone in alcoholic obfuscation, as to be unable to recall, the following morning, that Dr. Willard Smith gave his presidential address on that occasion. We recall the smoker of the meeting for last year, held over the line from Yuma. In the midst of it, when the Mexican children were looking in at the doors and windows in amazement at the behavior of a supposedly superior race, one of the sober and observant doctors present remarked: "Isn't this a hell of an exhibition for such an organization to be giving to this generation of children?" We were forced to agree with him that it was all of that. Again we congratulate Pima County on its decision to have no exhibition of which we would not be willing to have moving pictures taken, and shown at the public theater the next day, for the edification of the public whom we profess to serve and whose respect we claim to merit.

A NEW MEDICAL JOURNAL FOR LAITY

"Medical Progress," a Journal for Laymen, made its initial appearance in March. This is a quarterly journal under the auspices of the American Association for Medical Progress. This Association, whose purpose is "to diffuse among the lay public an understanding of research methods in medical science," should have the sympathetic support of all public spirited medical men. In the initial number of this magazine there is an article by Dr. Gladys Dick on "The Control of Scarlet Fever," together with much interesting material relative to medical legislation. One year's membership in the Association, together with the journal for one year can be secured for $2.00, by addressing the Association at 370 Seventh Ave., New York.

NEW MEXICO MEDICAL SOCIETY

FORTY-SIXTH MEDICAL MEETING

ALBUQUERQUE, N. M.

MAY 10, 11, 12

1928

ANNOUNCEMENTS

Sessions of the New Mexico Medical Society will be held in the assembly room of the Alvarado Hotel.

No addresses or paper before the Association except those of the president, orators, or invited guests, shall occupy more than twenty minutes and no one shall speak more than once on the same subject. Papers, when read, become the property of the society and must be immediately handed to the secretary or reporter.

Hotel reservations or other information concerning the meeting or entertainment may be had by communicating with:

Dr. L. B. Cohenour, Secretary Bernalillo County Medical Society, Albuquerque, N. M.

Tickets for dance can be had at registration desk.

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CARL MULKEY, M. D. - Albuquerque, N. M.

GENERAL PROGRAM

THURSDAY, MAY 10, 1928

MORNING SESSION

8:00—Meeting of Council.
8:30.—Meeting of House of Delegates.
9:30.—Call to order by
PRESIDENT C. B. ELLIOTT, M. D., Raton, N. M.
Invocation.—DEAN H. R. A. O'MALLEY, Albuquerque
Address of Welcome.—P. G. CORNISH, JR., M. D., President Bernalillo County Medical Society.
Response.—ROBT. E. MCBRIDE, M. D. Las Cruces.
Introduction of President-Elect.—M. P. MARTIN, M. D., Toas, N. M.
President's Address.

SCIENTIFIC SESSION

1. F. H. CRAIL, M. D. - - - Las Vegas, N. M.
"Group Practice and the Small Hospital As a Means of Meeting the Needs of Communities in New Mexico."
2. C. W. THOMPSON, M. D. - - Pueblo, Colo.
"The Contribution of Psychiatry to Medicine."
3. O. S. FOWLER, M. D. - - - Denver, Colo.
"Tongues and Edema."

12:00 Luncheon.

AFTERNOON SESSION 1:30 P. M.

4. G. V. BRINDLEY, M. D. - - Temple, Texas
"Cancer of the Rectum."
5. JOHN V. BARROW, M. D., Los Angeles, Calif.
"The Diagnosis and Treatment of Human Intestinal Protozoa."
6. WILBURN SMITH, M. D. - Los Angeles, Calif.
"Superior Mesenteric Thrombosis."
7. A. J. MARKLEY, M. D. - - Denver, Colo.
(*Subject to be announced.*)

FRIDAY, MAY 11, 1928

MORNING SESSION, 8:00 A. M.

8:00—Meeting of Council.
8:30—Meeting of House of Delegates.

SCIENTIFIC SESSION

8. H. A. MILLER, M. D. - - - - - Clovis, N. M.
"Simple Technic for the Estimation of Blood Urea."
9. H. W. SNYDER, M. D. - - - Denver, Colo.
"Diagnosis and Treatment of Marie-Strumpell Osteoarthritis." (Illustrated).
10. SANFORD WITHERS, M. D. - - Denver, Colo.
"Principles of the Treatment of Cancer." (Illustrated.)

12:00—Luncheon.

AFTERNOON SESSION 1:30 P. M.

11. E. W. PHILLIPS, M. D. - - Phoenix, Ariz.
"The Role of Indiscriminate Tonsillectomy in Lighting Up the Tuberculosis Case."
12. GEO. PINESS, M. D. - Los Angeles, Calif.
(*Subject to be announced.*)
13. JAMES F. PERCY, M. D. - Los Angeles, Calif.
"Cautery Surgery in Carcinoma Above the Clavicle." (Illustrated.)

SATURDAY, MAY 12, 1928

MORNING SESSION, 8:00 A. M.

8:30—Meeting of House of Delegates.
Election of Officers.

SCIENTIFIC SESSION

14. M. B. CULPEPPER, M. D. - Carlsbad, N. M.
"X-Ray Dermatitis."
15. CRUM EPPLER, M. D. - - - Pueblo, Colo.
"Gall Bladder Surgery." (Specimens Mounted in Natural Color Will Be Shown.)
16. ROBT. G. PACKARD, M. D. - Denver, Colo.
"The Treatment of Infantile Paralysis."

12:00—Luncheon.

AFTERNOON SESSION 1:30 P. M.

17. VICTOR E. CHESKY, M. D. - Halstead, Kans.
(*Subject to be announced.*)
18. ALEXIUS M. FORSTER, M. D., Colorado Springs.
(*Subject to be announced.*)

GENERAL SESSION, 3:00 P. M.

Report of House of Delegates.
Resolutions.
Good of the Profession.
Adjournment.
4:00 P. M.—Meeting of New Mexico Tuberculosis Association.

GEORGE P. SAMPSON

Dr. George P. Sampson, veteran physician of Winslow, Arizona, and one of the pioneer physicians of Arizona, died at his home in Winslow, on March 23, following an illness of six weeks. Dr. Sampson was born in 1855, and graduated in medicine from the Miami Medical College of Cincinnati, in 1880. He came to Arizona about thirty years ago and has been located in Winslow during this third of a century, actively practicing his profession. He has served several terms as county health officer and has been prominent in civic and public affairs. He has been a consistent and active member of the Arizona State Medical Association for years, helping to form the Navajo-Apache County Medical Society and serving as its secretary until quite recently. During the funeral services, the stores and places of business were closed, as a testimony of the high respect in which he was held by his fellow citizens. Truly, a man has not lived in vain, when he can create such sentiment in the hearts of his fellow men.

TWO COURT DECISIONS OF INTEREST

The Supreme Court of Arizona has ordered a retrial in the contest of Dr. W. F. Chenoweth of Nogales. to collect fee of $10,000 for professional services rendered over a period of years. This fee was first allowed by the District Court, whose decision was reversed by the Supreme Court; upon reargument by the doctor's attorneys (Whitney & Baker of Phoenix,) the Supreme Court has ordered a new trial of the case. We commented on this case in an editorial in the February issue of this journal.

The other decision of interest has also been mentioned in the pages of this journal. Dr. J. I. Butler of Tucson was sued for alleged x-ray injuries to a patient under treatment for sarcoma. The patient died from the sarcoma and the complaint was that the x-ray treatment contributed to the fatal outcome. Verdict for the plaintiff in the sum of $1500.00 was granted; this was reversed by the Supreme Court, who remanded the case for retrial. Verdict was again given for the plaintiff, and on appeal, the Supreme Court again reversed the decision and, this time, ordered verdict for the defendant, on the grounds that no testimony had been introduced tending to prove that the x-ray treatment contributed in any way to the fatal outcome of the disease.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

(Southwestern Division)

The Southwestern Division of the American Association for the Advancement of Science will be held at Flagstaff, Ariz., April 23 to 26. This Division embraces the members of the Association residing in Arizona, Colorado, New Mexico, West Texas, Sonora and Chihuahua, Mexico. The president is Lansing Bloom, of the School of American Research, Santa Fe; the secretary-treasurer is W. P. Taylor of Tucson, Ariz. Dr. E. C. Prentiss, of El Paso, is the chairman of the Section on Medical Sciences. This is the ninth annual meeting of the Southwestern Division.

EL PASO COUNTY MEDICAL SOCIETY

February 6.

The meeting was called to order by the president, Dr. E. J. Cummins, with thirty-two members and six visitors present.

DR. W. E. VANDEVERE reported a case of a thumb tack lodged in the left bronchial tree, showing a radiogram demonstrating the tack in the bronchus. The doctor removed the tack by the use of the bronchoscope, complete recovery of patient resulting.

A letter to the Society from the El Paso Scholarship and Loan Fund was read and discussed. Motion was made, seconded and carried that the secretary write a letter to the organization asking that a member of its Board of Directors appear before the society and explain further its scope and purpose.

Application for membership of Dr. J. J. Gorman was reported upon favorably by the Board of Censors, and he was unanimously elected to membership in the Society.

DR. CASELLAS showed radiograms of interesting cases of tuberculosis, as follows:

1. Interesting because of location of the lesion. The upper lobe is free but for a little triangular area in the uppermost portion of the middle lobe. The middle lobe starts at the mid-axillary line on the fourth rbi and goes downward and forward to end at the seventh rib in front.

2. Baby about three months old, who died while nursing. The condition of the lungs showed very extensive miliary tuberculosis.

DR. WILLIS W. WAITE displayed the lungs of the child, calling attention to the fact that they are hard and solid, yet full of tubercles. The child apparently was not sick—at least the parents did not know it was sick—and it died without medical attention. It is very probable that somebody in house had open tuberculosis.

DR. S. H. NEWMAN reported cases, as follows:

1. Mexican man, age 49, laborer, entered the hospital Nov. 21, 1927. Gave history of having trouble with both eyes two years ago, more so on left side. Present complaint: Has been ill since last February; has been working at the smelter and it seems that the dust gave him a stinging sensation. Went to the hospital at the smelter for perhaps a week after being unable to continue on duty, on account of partial paralysis of face, and staggering, largely from weakness. Physical examination showed eyes blinded, throat inflamed, few rales in right chest, slight rigidity over spine, skin dry, temperature 100, pulse 99, respiration

20; otherwise, chart shows negative findings. Urinalysis specimen was partly water; blood Wassermann negative. Working diagnosis was luetic paralysis. Patient was put on potassium iodide, and had a good deal of vomiting. He died December 22, 1927. Final diagnosis on chart, luetic paralysis and malnutrition. DR. WILLIS W. WAITE, who made portmortem, reported there was not enough evidence to make the diagnosis of luetic paralysis, and postmortem findings showed acute active tuberculosis in the right lung. The brain was not removed or examined, as nothing was known about the history of the case.

2. A. C., age 43, occupation not stated, was in hospital from February 16, 1927, until he died in January, 1928. Had been receiving intravenous and intramuscular injections at the clinic and said his blood was examined there. No history of tuberculosis or cancer; family history negative. Present complaint: had been blind for almost nineteen months, loss of sight coming on gradually. He went to the clinic and was given antisyphilitic treatment without improvement, gradually becoming totally blind, and was sent to the hospital by the Associated Charities. Physical examination showed blindness in both eyes; otherwise negative. Blood pressure, systolic 140, diastolic 65; urine and blood Wassermann negative. Diagnosis: luetic paraplegia. He ran normal temperature, and pulse was normal except in the last couple of months, when it ranged between 90 and 100, up and down. He was rather restless, did not take interest in anything or in his condition, but did not complain; talked very little and gradually became entirely irrational; was very uncleanly and would soil clothes and bed; finally took to bed and rarely got out of it; died, January 5, 1928. The progress chart shows that on March 5, 1927, he had some sort of paralytic stroke, when he frothed at the mouth, muscles twitched, and partial paralysis of the right side resulted but had entirely disappeared by May 22nd. What cured him, chart does not state. Final diagnosis: general paresis.

DR. WILLIS W. WAITE reported that the body was markedly emaciated when postmortem was held, and that it was a typical case of paresis. By way of comparison, he displayed specimens of normal brains, pointing out the difference in this case and calling attention to the fact that parts were missing which should have been present. The doctor stated that, in most cases of general paresis, you get a positive Wassermann, whereas in this case Wassermann was negative, and there was no record of a spinal fluid examination, which in these cases is always positive.

DR. E. W. RHEINHEIMER reported a case, as follows: L. H., age 53, colored, widow; occupation, cook; weight, 148; height, 5 feet, 2 inches. Family history unknown. Past history: Had measles and mumps during childhood; typhoid, ten years ago, with uneventful recovery. For about ten years she has had what she calls epileptic fits or attacks, during which she falls, grinds teeth and remains unconscious for several minutes, the attacks appearing at intervals of an average of every six months. Menstrual history began at 18, always regular and of three days duration, except in 1926, when two periods were missed, and again in 1927, when two periods were missed. No pregnancies, no abortions or miscarriages. Last menstruation in April, 1927. Has had bilateral cataract for several years, the left being operated on about three years ago, without success.

The patient has had diabetes to her certain knowledge for the past six years, the manifestations being excessive thirst, polyuria and slight weakness. About four years ago, the small toe of the right foot became "sore" and did not heal under ordinary home treatment. A physician prescribed a special diet and the toe then healed. About three years ago, the left foot became gangrenous, involving all the toes and the dorsum of the foot. Entered hospital at Austin, Texas, where she remained six months on insulin and diet treatment. There was extensive sloughing of the foot and amputation was considered. However, under treatment and drainage the foot gradually recovered. In August, 1927, again had slight gangrene of the left foot and was treated in the El Paso City-County Hospital with insulin, and recovered. During the course of the diabetic period, she has been on more or less desultory diet, at times adhering to the outlined diet, especially when gangrene has complicated the disease. At other times, she has eaten practically what she wanted, the usual average meal consisting of meats, vegetables, especially of the green variety, fruits and gluten bread. It is known that whenever the opportunity presented itself, she ate candy and other carbohydrate foods. The weight has remained the same, practically, for several years and she has felt well, being able to pursue her duties except when the feet have been involved. No history of excessive headaches; venereal disease denied.

Present complaint: Since about January 5th, the right foot has been sore and tender and at the present time is extremely sensitive, especially the distal portion and around the instep. At the base of the small toe, dorsal surface, is an ulcerated area about two centimeters in diameter, from which there is a foul, dirty discharge. On the palmar surface there is a smaller ulcerated area with the same dirty discharge. The skin over the entire instep is dusky purple in color with areas of yellow discoloration. On the lateral surface of the great toe, is a gangrenous area about three by two centimeters in size. Patient feels well but has excessive thirst. Has been dieting since the onset of the present trouble, but thinks she needs some insulin.

Examination shows a well developed and nourished colored female, apparently not very ill. There is an excessive fat deposit, especially over the chest and abdomen. Head negative except that several teeth are missing and the remainder dirty. Chest: lungs negative except that there is slight high pitch to the percussion tone over the left base posteriorly. Heart apex beat not felt or seen, left border nine centimeters from midsternal line, right border three centimeters from midsternal line, base 4.5 centimeters, the outlines being determined by percussion. Sounds normal, rate 76. Abdomen: no evidence of abnormality made out. Extremeties normal except considerable scar tissue on right foot and the above indicated infected and gangrenous areas of the left foot. Nervous system: no evidence of abnormality made out. Extremities sp. gravity, 1036; albumin, positive; sugar, 2.5 per cent; indican, negative; acetone, trace; diacetic acid, negative. Microscopical examination: large amount of pus, few granular and a few hyaline casts, few red blood cells.

Treatment and course: Patient in bed, given outlined diet providing 1600 calories daily and insulin 24 units daily, given 10 units in a. m., 6 units at noon, 8 units in p. m. Hot saline packs to foot. January 15, 1928, incision was made in instep, left foot, and small amount of broken down tissue evacuated. Urine: acid; specific gravity, 1028; sugar, positive 1.22 per cent (40 grams); albumin, positive; pus, hyaline and granular casts present. January 16, 1928, patient apparently has grippe, temperature 104, pulse 118, throat red. Given alkali and push fluids, phenacetin 5 gr. every four hours. Foot looks considerably better, gangrenous area on left great toe dry, no pain in foot, consider-

able drainage from small toe and instep. January 18, 1928, patient was found in comatose state this morning breathing slow and regular, no acetone odor to breath, no twitching, skin and mucous membranes very dry, pulse rate 60 per minute, urine passing involuntarily. Urine: albumin 30 to 40 per cent, sugar not determined. Blood pressure, 150/100. Apparently uremic coma. Given intravenous fluids, stimulants, without avail and died January 19, 1928.

Now the question in connection with coma was whether it was diabetic, uremic or the result of too much insulin. The last can be ruled out. There was no acetone odor to the breath; the tension on the eyeballs did not indicate diabetic coma. Here was a case that had apparently done well on the diabetic treatment when she would follow it. However, she would take insulin only when she had gangrene. If she had taken the treatment and persevered with it, she would never have come to the end she did. What probably caused the end result was this acute infection and involvement of a damaged kidney. It seemed to be a rheumatic coma, rather than diabetic.

DR. E. A. DUNCAN, in speaking about the ordinary routine management in cases of diabetes, stated that this is a disease which should be handled by the general practitioner; that the disease is widespread and the services of one who has special knowledge are usually not available. The doctor cited the case of a woman who came into his office, as follows:

Patient 74 years old, complained of loss of weight and excessive thirst; no fundamental history of diabetes, but with the loss of weight and excessive thirst, it was quite probable what the situation was. No previous serious illness, vision good. At one time she had had an attack which was said to be due to gallstones. This was sometime last fall; one year ago was rejected for life insurance. She said she had some sort of examination and did not pass the examination.

Present illness: Dates the loss of weight back to last April. Says she has lost 50 pounds since that time. She requires cathartics daily; nothing else of importance in her history. Examination showed no abnormalities except her very recent loss of weight. She is 60½ inches tall and weighs 130 pounds. Now, looking at the chart, we will find that 136 pounds is normal weight for this height, but you do not need this when you want to make a diet adjustment. The urine specimens had a tremendous sugar content and turned bright orange with ordinary Benedict's test; no diacetic acid. Here was a plain, apparently uncomplicated, case of diabetes developing in an elderly woman who had been overweight—an important factor in the development of diabetes. In beginning a diet adjustment in diabetes, we want to know, first, what the patient is going to require, and whether it is entirely necessary to use a restricted diet. If patients are normal weight, or slightly under, there is no reason for reducing. Now, you can figure in these cases that a person 5 feet tall should weigh 110 and for each inch over that, should weigh 5 pounds more. Weights by that measure are a little less than the average weight tables, but the weight tables are too high for healthy people. This woman is 74 years old; the body processes have more or less slowed up and may take less calories than averaged by her height and weight scale, which is 1860 calories. The only way that can be shown, however, is by time. Some people eat very little and maintain normal weight, or gain weight. Scales are the only things that can determine whether the caloric requirement of the average individual is being maintained. We assume she is going to require 30 calories per kilogram weight and she weighs 62 kilograms. How is that going to be apportioned in her diet? To begin with, every adult must have ⅔ of a gram of protein per kilogram of weight, to take care of the tissues, as, if he has less, he burns up the tissues. We must, therefore, give ⅔ of a gram per kilogram of body weight to be on the safe side and at the outset, to be perfectly sure, I will give her a gram. So I have worked out a diet for her and she went to the hospital yesterday afternoon. I will keep her on this diet for two or three days and if, after that, she still runs sugar, she is going to be an insulin case. If she does not, then I can add 9 grams carbohydrates and 3 grams protein. If, however, she continues to run sugar, she is going to be an insulin case and I then find out how much insulin she is going to require. This is ascertained by saving the urine for 24 hours. Say the total quantity in 24 hours is 2000 c.c. and it runs 1 per cent or 20 grams sugar. She has then an intake of 114 grams and her tolerance is 94 grams. We have to give her enough insulin to take care of this glucose she is not burning. It varies from .75 grams per unit up to 3 grams per unit, so we will presume she is going to require 10 units per day, which can be given in one dose in the morning. To start with, to be a little certain we are not going to give her too much, we give her 8 units in the morning. If that takes care of this sugar, well and good. After two or three days, get the blood estimation of sugar. If it is under 150 mgm. per 100 of the blood, we let her stay at that. If in three days she is free of sugar, we can experiment by adding carbohydrates. Before letting her come out of the hospital, make sure her blood sugar is down to the normal level.

A woman 74 years of age ought to be a mild case and ought to be easy to handle. I think she probably will not be an insulin case. I have several elderly ladies who have started on insulin and who require it because they could not maintain a sugar-free urine or low enough blood sugar without insulin. In the course of three or four months, they are taught to test their urine and report to me. If they have had no sugar and maintain body weight, have no itching or skin eruptions, and no excessive thirst, I tell them to stop the insulin for one week and at the end of that time go to the laboratory and have a blood sugar test made on an empty stomach. I get the report, and if the pancreas has come back enough for them to digest a diet, that is sufficient for them, they need no more insulin.

Another case is that of a boy, 15 years old, who weighs 50 kilograms. He is only 15 years old, so has to grow some and has to manufacture body tissue. To do that he has to have more than this woman, who was given approximately one gram protein per kilogram, so he requires more protein and more calories. A child 4 years old requires 3 grams protein in order to maintain body growth; the minimum in adult life is ⅔ of a gram per kilogram. The vast majority of children with diabetes require insulin. In this case, however, with adjusted diet, the child soon became sugar-free and did not need insulin.

DR. WILLIS W. WAITE presented specimens of the normal pancreas and those of persons who had had diabetes, pointing out the difference.

DR. F. D. GARRETT complimented Dr. Duncan on the excellent manner in which he had outlined the subject of diabetic feeding and told of a series of 97 cases of pancreatitis, of which 93 had gall-bladder infection. Of these 93 cases, 34 had stones, showing that from the standpoint of the surgeon, infection of the gall-bladder is by far the most frequent cause.

DR. K. D. LYNCH spoke on acute cases of pan-

creatitis, citing a case which he had in his early practice.

DR. E. B. CLARK reported a case of cirrhosis of the liver, stating that it had come under his observation some three months ago, but he was unable to make diagnosis because the man had so many complications. The patient was very contrary and it was impossible to get a specimen of urine or get an opportunity to take his blood pressure until about three weeks before he died. At that time blood pressure was 120/70 and urine showed a great deal of albumin. The patient did not complain of any special pain in his left side or over the heart region, but unquestionably he did have a great deal of pain and would say nothing about it. He died suddenly and, on autopsy, it was found that he had an old infarct which had healed, apparently, and after that had a very recent infarct, which was of enormous size.

DR. G. WERLEY stated that he remembered this case very well, that he had been called in some years ago and had been watching this man for the past five years hoping he would die before he (Dr. Werley) died, because he wanted to see what was the matter with him. Dr. Werley stated that this man was about 70 years of age, an old ice cream dealer, who had his first attack of pain in the stomach and chest about five years ago. "I did not see him at that time, but later, in August 1923; when I first saw him, he said he had always been well until six months before, except for a little shortness of breath. In May, 1923, he started to walk across the street to look after a house, when he was seized with a very violent pain in the middle and upper sternum and came back to the house in great distress; was short of breath, coughed incessantly, vomited a great deal of blood which came up in clots and later looked like beef juice; pain continued for 24 hours, was given morphine but without relief. Recovery was very slow. X-ray picture was taken with the idea that he had cancer of the stomach or ulcer, but was negative. Before this attack blood pressure had been 170. After he got over this attack, in order to recuperate he went to Cloudcroft, but got short of breath, blue, started vomiting, etc., and the doctor there told him to get away as quickly as he could.

"When I saw him the heart sounds at the apex were feeble and not well produced, liver easily palpable, both lungs congested at base, mind confused, and apparently he had all kinds of delusions. In many of these old heart cases, we have a condition of mind that seems as though they are going to be permanently insane; however, the mind always comes back. Wassermann reaction was negative, both blood and spinal fluid. He gradually improved and in January, 1924, I made the following note: Still has dyspnea and cannot sleep well; pulse 94; blood pressure 130/80; heart regular. He got fairly well after this, but was a very hard man to manage."

DR. WILLIS. W. WAITE reported that autopsy in this case showed some old tuberculosis and adhesions in the lungs, but the most important lesion was in the heart. Dr. Waite had specimens of hearts from normal, healthy individuals, which he compared with this heart, pointing out the hypertrophy and aneurism, showing the old and the more recent infarcts.

(February 13).

The El Paso County Medical Society met in regular session February 13, with a paper on Bovine Tuberculosis by DR. WM. BRANCH.

The paper was a detailed resume of the subject and dealt particularly with the economic aspects of the disease. The increased demand for good milk from certified or tested herds has led to milk embargoes in several of the leading cities. As an article of diet, milk must be considered the most important and the most perishable. Dr. Branch emphasized the occurrence of contact and concongenital bovine tuberculosis and the consequent continuity of infection among dairy cattle. He is very optimistic over the possibility of maintaining healthy herds by the Calmette inoculation of calves with the attenuated bovine tuberculosis cultures.

In his own herd, Dr. Branch is hopeful of trying out the experiment shortly, if the culture is available. Since bovine tuberculosis is essentially a gland and bone disease, the elimination of diseased milk naturally diminished the incidence of these particular types of infection in many cities. Statistics were given from many clinics that indicate a general lessening of bone and glandular tuberculosis.

In conclusion, Dr. Branch recommended: (1) The eradication of the tubercular cow (a preventable source of disease); (2) infected children in unsatisfactory surroundings should be placed in preventoria; 3) the ultimate slaughtering of dairy calves or immunization; and (4) the routine test for tuberculosis of all cattle, whether dairy or otherwise.

DR. HARRY LEIGH opened the discussion. He pointed out the local decrease in bone tuberculosis, especially during the past five years. Most cases of gland and bone tuberculosis come from the outlying districts, among those who are using milk not subject to control. He stated that he was not ready to accept Calmette's work on immunization although the results have been highly gratifying so far.

DR. LAWS stated that he was seeing much less bone and joint tuberculosis, in fact, only two cases in the past year and those were imported. He also thought time would tell whether Calmette's work was applicable to humans, but at present preferred waiting.

DR. EGBERT spoke and advocated continuation and expansion of dairy inspection.

DR. J. A. HILL, V. S., was invited to tell of his experiences in dairy inspection. A report of a recent meeting at Oklahoma City, on control and prevention of the spread of bovine tuberculosis, for the south central states, was given, with many hints applicable to local conditions. Dr. Hill stated that the well regulated dairy was no longer a menace to public health, but the trader and the small one- and two-cow dairies constituted the principal sources of infection at present. Unable to legally control the small dairies in the out-of-town districts, a means of declaring an area subject to complete tuberculin testing was discussed and the advantages to the producer emphasized. Thus, a tuberculosis-free area commands higher prices for pork as well as milk, and more than compensates in the long run for incidental expenses. Dr. Hill reported on several instances where institutions of learning developed many cases of tuberculosis among the students, that on investigation showed that the herds supplying the milk were 100 per cent infected and were the probable source of the disease.

JUDGE E. B. McCLINTOCK addressed the Society and invited them to participate in arranging some plan for the area organization. In addition to this task he asked for help in selecting a site and building for a new City-County Hospital. He said that the new institution should be in a location to serve the greatest number of patients, to aid in the humane care of emergency surgery and to facilitate the charity work of the clinics. The need of isolation of contagious and tuberculosis was apparent.

Mr. Price of the Price Dairy Company, briefly discussed their experience with "reactors" and

"plugged" cattle in eliminating infection from their herds. The history of the infection in the El Paso Dairy herd and the means of dissemination of the disease from the use of wooden troughs, was interesting from the contagious angle. He considers yearly testing in clean herds sufficient. Their only case in five years was a bull. All new cattle must be isolated for several months and have two negative tests before safe to turn into the regular herds.

DR. ANDERSON said he thought that, in infected herds, testing at six month intervals was not satisfactory, as he had seen reactors appear in a few weeks among cattle that were contacts.

DR. BRANCH closed the discussion by adding that his cattle were not pure breed and he figured he could experiment with the Calmette immunization without heavy financial loss.

(This paper appears in full in this issue of SOUTHWESTERN MEDICINE.)

(February 20).

At the meeting of the El Paso County Medical Society, held on February 20th, DR. P. R. OUTLAW read a paper outlining the life cycle of the malaria parasite and the role of the mosquito in the continuity of the disease. The title of the paper, "Potential Danger from Malaria in El Paso," was directed toward the handling of some of our own problems. The epidemic in Dona Ana County, New Mexico, he believes is a menace to El Paso County for some 350 cases were reported last summer alone and this probably constituted a small part of those actually infected. The carrier of the disease is the greatest menace and is the real source of the disease.

DR. McCAMANT, El Paso county health officer, opened the discussion by saying that the Rincon and Garfield districts had been sporadically infected for a long time. Last fall one case died in the upper valley, coming from Rincon. Some 350 miles of irrigation and drainage ditch offers a very satisfactory breeding place for mosquitoes of the Anopheles variety. These open water sites are full of vegetation and fulfill all the requirements for a satisfactory breeding place. He regards reporting most essential in the control of malaria.

DR. CASELLAS gave his experience in Porto Rico as a health officer and the excellent results obtained by maintaining ditches free from vegetation.

DR. ALEXANDER reported his fatal case of last summer, that had come from Rincon, New Mexico. The case was very malignant and the patient died after a very brief illness.

DR. JAMIESON told of the use of drip oil in running streams in a swamp area near war cantonments that were completely freed of malaria mosquitoes.

MAJOR SCOTT said that he had a large experience in mosquito control and that he regarded carriers as a serious source of infection. Also that it was only a matter of time until these carriers constituted a serious menace to El Paso. One case of double tertian that had been used to inoculate cerebral syphilis had come to his attention last summer. Dr. Gerber had traced most of the cases to one imported negro girl.

DR. EGBERT reported Dr. Bass's work in Mississippi, in which he had cut malaria incidence from 90 per cent ot about 18 per cent simply by control of carriers.

DR. WM. BRANCH spoke on the improved conditions along the Trinity river since his boyhood days. There, oiling and drainage were the main modes of attack.

DR. SWOPE said malaria had been present in the Rincon valley for twenty-five years, to his own knowledge.

DR. OUTLAW, in closing, said that we had frequently oiled part of the land across the border in order to free the city of the mosquito nuisance as well as the suburban districts. Some 750 cesspools are one of the big problems. Eleven thousand dollars ($11,000) are appropriated annually to take care of the oiling and mosquito supervision alone.

DR. K. D. LYNCH presented a paper on "Congenital Cystic Kidney." The discussion dealt with all features of the disease and case reports were used to illustrate different types of the disease. Many of the theories as to cause were mentioned along with the present accepted view that the disease is often present at birth and that some secondary factor accelerates development. Pain, hemorrhage and tumefaction are sufficient to arouse a suspicion of this condition. X-ray findings are fairly typical. Differential diagnosis deals especially with sarcoma and tuberculosis. Frequently the correct diagnosis is made out only on postoperative study of the removed kidney. Such a case was reported where a young child was operated, supposedly for a sarcoma. Section showed the typical markings of a polycystic kidney. Most polycystic kidneys are hard to palpation unless there is abscess, and then fluctuation may be felt. Several cases of unilateral nephrectomy in multiple abscess conditions were included in the series. No fatalities had been encountered from the operation per se.

DR. JAMIESON opened the discussion with a case report where a hydro-ureter had fulfilled most of the conditions of a polycystic kidney and disappeared when a catheter was inserted. Since this manouver there has been no recurrence of the tumor. Dr. Jamieson sounded a warning against double pyelography. He believes heredity plays quite an important part in congenital kidney.

DR. VANCE discussed the value of transperitoneal incisions for removal of large kidneys or kidney tumors. This incision enables one to get at the pedicle and control hemorrhage. Since his original description of this route he had modified the incision as follows: A lateral rectus incision is made down to the peritoneum and this structure is stripped off down to the pedicle of the kidney. In this way the necessity of two openings through the peritoneum is avoided. The advantage, in addition to hemostasis, is the adequate exposure.

MAJOR SCOTT asked Dr. Lynch why many cysts are found in the kidneys of tuberculosis patients.

DR. LEIGH mentioned the classical case of several polycystic kidneys from one family that are kept in the pathological museum at Northwestern University.

DR. LYNCH, in closing, said that he favored Dr. Vance's incision in some cases but the transperitoneal route was to be considered as the opening of choice for the removal of very large tumors. For tuberculous kidneys, the lumbar incision has some advantages in the suppurative cases. True enough, the route of Dr. Vance is very excellent where diseased ureters need removal. Several family records of cystic kidneys were cited to show that heredity is a factor.

(February 27)

At the meeting of the El Paso County Medical Society, held on February 27, Dr. George Turner presented a paper on "Diagnosis and Treatment of Bronchiectasis by the Injection of Iodized Oil." A number of slides were shown illustrating the

AMERICAN

HAYFEVER

All Sections——NORTH—EAST—SOUTH—WEST——*All Seasons*

Adequately and accurately covered by

ARLCO-POLLEN EXTRACTS

for Diagnosis and Treatment

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TREE HAYFEVER can be accurately identified by skin test with the pollens of locally prevalent trees and thereby differentiated from the "common colds" of early spring.

GRASS HAYFEVER begins about the time *tree hayfever* ends, *viz.* May 15th, and need not be confused with the earlier appearing and sometimes overlapping tree hayfever.

WEED HAYFEVER—August to frost—is unrelated to the previously occurring *grass hayfever* and is occasioned, according to the locality, by such late pollinating plants as the Ragweeds—Russian Thistle—Western Water Hemp—Carelessweed—or Sage Brush.

LIST of pollens for any section—any season—with commentary circular discussing the treatment of hayfever by *preseasonal* or *coseasonal* method, with respective schedules of dosage—sent on request.

THE ARLINGTON CHEMICAL COMPANY

Yonkers, N. Y.

conditions that oil had shown on x-ray examination. Dr. Turner then demonstrated the technic of the use of the oil in his laboratory. (This illustrated paper will be published in the May issue of this journal.)

(March 5)

At the meeting of the El Paso County Medical Society, held on March 5th, Dr. J. W. Laws presented a paper on the "Variation of Individual Cases of Artificial Pneumothorax." This treatise was supplementary to a similar paper read before the Southern Medical Association this winter, but the present paper has more detailed case records. The paper, with discussions, appears in full in this issue of Southwestern Medicine.

DR. RHEINHEMIER announced that the regular meeting to be held on Monday, March 12th, would be a joint meeting with the El Paso Dental Society, to be held at the ball room of the Hotel Paso del Norte. Dr. Boyd Gardner, Mayo Clinic, Rochester, Minn., will speak on "The Practice of Dentistry in Group Medicine."

(March 12, 1928)

A joint meeting of the El Paso County Medical Society with the Dental Society was held at Hotel Paso Del Norte, March 12th.

DR. BOYD GARDNER, D.D.S., of Rochester, Minnesota, who heads the dental service of the Mayo Clinic, addressed the meeting on "The Practice of Dentistry in Group Medicine."

Dr. Gardner first called attention to the fact that the modern dentist chair is the remaining vestige of the barber period of the early surgical practitioners. While, in the main, all the crudeness had given way to scientific equipment, the modern dental chair is still the barber chair and is in many respects as entirely unfitted for the surgery that is constantly being done. Continuing the idea, Dr. Gardner deplored the lack of surgical training in the dental profession and in the dental schools. He still regards dental surgery in main, as belonging to the antiseptic rather than to the aseptic period. The hospital, and not the dental office, is the place for surgical operations.

The surgical technic recommended by Dr. Gardner was, in a general sense, analagous to all generally accepted surgical procedures. First, shock from body heat loss and hemorrhage should be prevented. That means that patients following large extractions should not be permitted to walk home or to lie around the office, or to take an anesthetic in a cold room. Pain should be treated with heat or cold compresses and sedatives. Clots should be left undisturbed when attempting to relieve pain. The intact clot he regards as the first essential of healing and repair. Follow up visits should be made. A limited number of extractions should be attempted at a time and the patient's reaction by temperature rise, pulse elevation and pain, should be the guide to further surgery. Too much surgery at one time is dangerous. Care in preventing the introduction of outside infection can be accomplished through proper preparation of the patient and by employing sterile linen and instruments.

In ten years no mortalities have occurred at the Mayo Clinic from extractions. This he attributed largely to a careful selection of the anesthetic. He warned against the use of nitrous oxide in arteriosclerotic cases and in high blood pressure patients. He prefers local anesthesia because there is cooperation by the patient. A great deal of care should be taken against possible inspiration of blood under any anesthetic. Foreign body aspiration, such as fillings and pieces of splintered teeth, are frequently found at the Clinic as a cause of bronchiectasis. Many months may elapse after the inspiration of foreign bodies before lung symptoms occur.

Dr. Gardner employs a surgical flap in extraction work to facilitate visibility of the gingival portion of the teeth. A chisel is used to smooth off osseous spicules to either side of the dental excavation, but care is taken to preserve intact the interdental bone with its rich blood supply. The gingival flap is sutured with interrupted catgut to approximate the edges. Dental impressions are made and false teeth are in use within two days if possible. Occasionally a bony ridge beneath the frenum of the upper lip must be trimmed down and the soft tissues reattached in situ; this procedure lessens the pain in the use of new plates.

Many slides were shown demonstrating the technic advocated. Dental x-rays of patients who had worn plates for years with supposedly complete extractions, but who still had roots intact were shown. A total of thirty-three of such persons admitted to Mayo Clinic have such a condition. Consequently re-check with the x-ray after extractions, is essential.

The place of the dentist at a clinic is to examine teeth as a consultant. The role of infection, mechanical defects and malocclusion and extraction when necessary comprise the bulk of all dental examinations done. Dental examinations done in a large clinic amount to about one-

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fourth of the total special examinations necessary. He believes that the search for focal infection should first eliminate such sources as the prostate, cervix, tonsils, colon, etc., before sacrificing the teeth in questionable cases. Dental infections in rheumatic conditions are important only in the strictly infectious types. The traumatic, senile and gouty varieties may have the dental infections as an aggravation, but not as a definite etiology.

(March 19, 1928).

At the regular meeting of the El Paso County Medical Society, held on March 19, DR. J. G. WILSON, Surgeon, U.S. Public Health Service, presented paper on "Classification and Diagnosis of Feeblemindedness" with slides and cases to illustrate his treatise. He defined feeblemindedness as "a state of restricted potentiality for or arrest of cerebral development, in consequence of which the person affected is incapable at maturity of adapting himself to his environment, or to the requirements of the community so as to maintain existence independently of supervision or external support." This then embraced three groups of cases, namely, the idiot, the imbecile and the moron. By defining and elaborating upon these divisions, Dr. Wilson showed the necessity for a measure of intelligence such as is found in the Simon-Binet performance ability tests. Thus, by using an average normal, for comparison, the idiot's intelligence will vary from that of a new born baby to that of a three year old; the imbecile from three to seven; and the moron from seven to eleven. The use of the quotients was then explained in detail. The importance of an exact diagnosis rests upon (1) the possibility of a cure of the patient himself, (2) the prevention of crime and economic waste, (3) the moral responsibility of delinquency, and (4) the prevention of propagation of feebleminded stock. The tax payer's money can be saved by proper classification of such cases and especially at the port of embarcation. (Paper to be published in an early issue of Southwestern Medicine.)

DR. S. D. SWOPE presented the second paper, on "The Psychoneuroses; Their Influence as an Entity and Their Importance in Medical and Surgical Syndromes." He recited a number of cases in the evaluation of clinical evidences of medical illustrating the importance of the physical factors and surgical diseases.

CAPTAIN PRATT, of the William Beaumont Hospital, opened the discussion. He emphasized the difficulty of differential diagnosis of the high grade moron because such persons are capable of a considerable degree of educational attainment. The inability of the moron to think along the abstract lines is of great help in classifying. Capt. Pratt believes the Simon-Binet method of classifying, or some method analagous to this, is most useful. Such a modification is used in the United States Army. Reformatory and penitentiary inmates and the prostitution elements are composed mostly of morons.

DR. ELLIOT PRENTISS asked Dr. Wilson what the present concept of the presence of Nisel granules in mental and nervous diseases meant.

DR. WERLEY commented on the practical applicatoin of Dr. Swope's paper in dealing with pseudo-angina in a certain type of cases that had occasionally come to his attention.

DR. SWOPE in commenting on Dr. Wilson's paper spoke to some extent on the present confusing nomenclature. He related the case of a family with a hereditary syphilitic taint in which four idiots were born to apparently normal parents. The grandfather on the father's side was a known syphilitic.

DR. DUNCAN spoke on the role of hysteria and

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the neuropathic complex in producing spurious disease. He regards psychoanalysis generally impracticable, on account of the time required to arrive at a diagnosis. Sometimes one hundred hours are needed to completely work out a case.

DR. WILSON in closing said he didn't know the significance of Nisel bodies except as an evidence of histological disintegration and cellular death. He urged the employment of simple and accepted nomenclature in classifying mental diseases.

DR. SWOPE in closing urged the elimination of the psychogenic elements in surgical cases.

(April 2)

The meeting of the El Paso County Medical Society on April 2, 1928, was a joint meeting of the El Paso Bar Association with the El Paso County Medical Society.

A clinical case of dystrophic amentia was presented by DR. SWOPE. The patient was a large young man, twenty-two years of age, with no ability to initiate or to carry out orders. This condition followed a severe typhoid in early childhood that apparently had produced a severe toxic encephalitis at that time. Prior to his illness the boy had been unusually bright, as are the other members of a large family of children. The young man has learned to ride on the ranch, but is not dependable. The only task he performs well is wood chopping. During the last few months muscular weakness has developed with some further mental deterioration. Dr. Swope believes that the frontal areas are progressively degenerating. The prognosis is bad—probably life will not exist more than a few months.

The first paper on Medical Ethics was prepared by DR. T. J. McCAMANT and read by Dr. Swope. The paper discussed the history and the earliest infractions of medical ethics and the history of the English and successive American codes. The tenor of the paper might be said to be that a gentleman never needs a code for honorable conduct. Such problems as consultation, medical relationship among colleagues, the patient, and the profession at large were duly considered. A plea for sponsoring the young medical man so as to discourage questionable practice was well received.

The feature of the evening was a scholarly discussion of the basic principles of medical jurisprudence by MR. MAURY KEMP. The complete treatment and technical nature of the paper must be read in another section of the journal for appreciation. (See next issue.)

Discussion was opened by Mr. Nealon, attorney, who told of the gradual trend in the criminal laws dealing with liability for crime during insanity or while under the influence of drugs. Attorney Nealon, with other members of his profession, raised points on old cases previously tried in the local courts where medical testimony was concerned. Pointed, crisp and sparkling humor was infused in the generous razzing accorded certain doctors and the essayist.

DR. EGBERT deplored the necessary exaltation directed toward the fee splitting problem and the unwarranted exaltation of an occasional consultant whose surgical services are needed. He espoused the lawyer's method of handling fees in legal consultation. The European method of having the court appoint medical experts he believes superior to our system.

ATTORNEY FRYER thinks the dispensing with the present system of using expert witnesses would seriously impair justice of the courts in criminally insane or those suspected of being insane.

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STAFF MEETING OF EL PASO MASONIC HOSPITAL

February 1928

DR. HARRY VARNER reported a case of a multipara booked for delivery March 26, living fifteen miles from El Paso. She went into labor Feb. 2 and came to the Masonic Hospital with her own physcian. The membranes had already ruptured and she was delivered almost immediately after admission. Dr. Varner arrived just after the patient had delivered a headless monstrosity. Almost immediately a second living fetus, delivered by a breech presentation; it appeared to be about two months premature. The placenta was examined and seemed to be complete. The cord of the monstrosity was unusually small being about the size of a match. The second fetus lived about twenty-three hours. Nine days after delivery the patient passed several large clots and bled profusely. She had had no fever and no pain. Thirteen days after delivery. the patient got out of bed and had so profuse a hemorrhage that she was immediately taken to the surgery. Examination revealed a second placenta about two and one-half inches in diameter on the anterior wall of the uterus, extending down into the cervix. This had partially separated so the loosened portion was removed and the uterus packed to control the profuse bleeding. The next day the rest of the placenta came away. No further trouble was encountered.

The family history is of interest in this case because the father of the infant is a twin, with a twin sister who is a deaf mute. The premature infant was of fair weight, but was weaker than usual for a child of that gestation and weight.

In discussion, DR. RAWLINGS remarked that the unusual feature of the monstrosity was the complete absence of a head. He said that he had seen many without faces and with portions of the brain visible, but that this is the first he has seen where the development stopped at the neck and shoulders. (The specimen was shown and examined.) He also called attention to the second placenta which being so low had not caused hemorrhage until late and had never produced fever.

In Dr. Varner's opinion it was the small placenta of the monstrosity, removed following the bleeding, since the larger delivered was attached to the living child at birth.

DR. RAWLINGS presented a case of hemorrhage in the newborn. This was a male baby, normally delivered with a labor not unduly long. Twenty-four hours after birth the infant began to vomit blood in rather large amounts. Twenty c.c of blood, obtained from the nurses, were injected into the buttocks of the child with immediate improvement of this condition. The baby made a complete recovery, eventually, although it developed a pyloric spasm which persisted for three or four weeks. The regurgitation was controlled by the administration of atrophine and thick gruels with a satisfactory gain in weight. In commenting on hemorrhage of the newborn, Dr. Rawlings said that in his earlier experience many of these cases had died, and that a few years back, doctors felt reasonably sure that such

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infants had a bad prognosis. He stated that he did not remember exactly when it became known that hemorrhage of the newborn could usually be cured by injection of blood from anyone at hand (preferably the father), into the muscle of the child, if given early enough and in sufficient quantities. In these cases, or in cases of cerebral hemorrhage of the newborn, he called attention to the importance of noting the bleeding and clotting time of the child. In hemorrhages of the newborn, and in cerebral hemorrhage, the average normal clotting time of five to seven minutes is often prolonged. Occurence is early and is not due to syphilis. Dr. Rawlings had had, or had been the consultant in, three cases, in the last six months. One case began to bleed the second day after delivery but the injection of blood was not given until the fourth day.

It was his opinion that the injections were usually given too late, and that, had this case been given the blood immediately after bleeding started the baby might have been saved.

Another case related by Dr. Rawlings was where a midwife had delivered a Mexican woman, and the next morning the child began to bleed from the rectum. The diaper contained at least one and one-half ounces of blood; other diapers showed equal or greater amounts, indicating at least ten ounces of blood had been lost. This child was sent to the City-County Hospital, but it died the next morning, in spite of blood injections. Of these three cases, two were fatal, but one might have been saved if given blood in time. Dr. Rawlings called special attention to the fact that blood does not have to be typed to be used for the bleeding child. The only thing to guard against is syphilis; therefore if the father is available, it is best to take his blood, and if not, take any available non-syphilitic donor, withdraw the blood from the vein into a 10 or 20 c. c. syringe, and injecting it immediately into the buttocks of the child. It has been found that human blood is the agent that will act best on these patients suffering from hemorrhage of the newborn, although horse serum is of value.

The patient can hemorrhage from any mucous membrane, but those that seem to be hardest to deal with are the type that bleed from the bowel. He mentioned the type where a baby is said to be menstruating, and stated that this is one of the types of hemorrhage of the newborn which should be carefully watched, and if this continues, blood injections should be given.

DR. E. J. CUMMINS reported a case of ovarian cyst, the most interesting feature of the case being the method of diagnosis.

The patient, a white woman of 27, married three years, never having been pregnant, noticed that her abdomen was increasing in size. She had no nausea, missed no menstruation, had no symptoms whatever except that her abdomen was gradually taking on the appearance of that of a pregnant woman. She was examined by a physician and told that she was four and one half months pregnant. One month later she was examined by another physician and told that she was five and one half monhts pregnant. One month after this examination, some doubt arising in her mind as to her condition she came to El Paso, where the following physical signs were found on examination:

Fairly well nourished woman who appeared to be perfectly normal except for the enlargement of her abdomen. The abdomen was symmetrically enlarged, and on inspection one would judge that she was six and a half or seven months pregnant. Palpation revealed a mass, symmetrical in outline about the median line, extending from the symphysis to about three fingers above the navel. The mass was soft, gave a sensation of fluctuation, was freely movable, and seemed to be within the body of the uterus. No fetal parts could be palpated. No tenderness over the kidneys posteriorly; liver and spleen could not be palpated. On vaginal examination, the cervix was found pointing downward, rather soft, no unusual discoloration of the vaginal or cervical mucosa. On bimanual palpation, the mass described above could readily be felt in the vagina, when pressure was applied to the abdomen. One seemed able to force the hand on the abdomen, between the turned to the right. The ovaries as such could not the abdomen seemed to be able to feel the body of the uterus between the vaginal wall and the mass. The body of the uterus seemed to be turned to the rgiht. The ovaries as such could not be made out. One did not get the impression that the mass arose in the broad ligament, because there was no bulging in the region of the adnexae. Examination did not cause the patient any pain.

X-ray pictures did not reveal any sign of a fetus. It was very evident that the patient had an abdominal tumor, probably an ovarian cyst. Lipiodol was injected into the uterine cavity and the tubes, very definitely showing the nature and origin of the tumor. The uterine cavity was small, the uterus pushed almost to a right angle toward the right, the right tube being normal in size and position. The greatly elongated left tube extended upward almost to the costal margin. This confirmed Dr. Cummins' diagnosis of ovarian cyst. The enlarging ovarian cyst had carried the tube with it, as it increased in size

The family history is interesting. The mother has a twin brother, the father a twin sister, and the patient's husband has twin uncles. Past History: The patient had never been ill except for the diseases of childhood, including mumps. She states that when she had mumps, she remembers that she went out in bad weather and got wet, but does not remember that she had any ovarian pain at that time. When she was in the sixth grade, she had occasional attacks of pain in the left side, once being doubled up on account of the severity of the pain. This was before she had begun to menstruate, but after she had mumps. Menstruation began at 13, and she had no irregularity, and no pain except for a time between the ages of 16 and 18.

Operation: Under ethylene anesthesia, incision was made about one and one half inches above the navel extending downward to the symphysis, one half inch to the left of the median line. The abdominal cavity was opened through the posterior rectus sheath, and the tumor found to be much larger than the incision. It immediately bulged into the wound, and every time the patient breathed, a little more of the tumor delivered itself. It soon was practically expelled from the abdominal cavity. The ovarian pedicle was clamped and the tumor removed. The pedicle was ligated with No. 1 chromic, the raw surface covered over with peritoneum. A small cyst was removed from the right ovary. The right tube was normal. The appendix was found to contain concretions and the distal end was clubbed; the appendix was removed. Patient made an uneventful recovery, leaving the hospital on the fourteenth day.

Pathological Report (Dr. Geo. Turner): The specimen consists of a large tumor removed from the abdomen together with the appendix. The tumor is a smooth encapsulated mass arising from the ovary. It measures 37x28 c.m. and has an elliptical outline. The capsule is a tough, rather thin fibrous membrane, constituting the capsule of a cyst. When it was opened about 2000 c.c. of mucinous clear fluid escaped. This left a cluster of smaller chambers, each about 4 to 6 cm. in diameter projecting from the pedicle into the larger cyst cavity. These smaller chambers also contain mucinous fluid varying in color from clear to yelow. All cyst cavity walls are smooth with no tendency to epithelial ingrowth. The appendix measures 86x9 m.m. The serosa blood vessels are tortuous, congested and prominent. The mucosa is thickened and infiltrated with endothelial leucocytes and round cells. It is filled with fecal matter.

Diagnosis: (1). Ovarian Cyst; (2) Appendicitis, chronic.

EL PASO COUNTY NEWS

DR. E. J. CUMMINGS has moved from the office group of Drs. Brown, Randel and Thompson, Mills Bldg., to share office space with Drs. Hendricks and Laws, Mills Bldg.

DR. N. G. PADEN, Carrizozo, New Mexico, was an El Paso visitor late in February.

DR. FRANK C. GOODWIN, orthopedic surgeon, has opened offices in the Mills Bldg. Dr. Goodwin is a graduate of the University of Virginia Medical School. He interned one year at St. Paul, (Minn.) General Hospital, one year at the Virginia State Orthopedic Hospital, and one year at the Gillette Crippled Childrens' Hospital, at St. Paul, Minn.

DR. SAM ARONSON has recently returned

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from a trip to Houston and points east for the study of physiotherapy.

DR. HUGH CROUSE continues to improve and we hope to see him shortly at his office.

DR. MARROTT has recently been appointed assistant city health officer to Dr. Outlaw.

DR. J. B. HUGHES, who has lived at Anthony, Texas, for the past fifteen years, died April 4. Dr. Hughes came to the southwest for tuberculosis and had practiced for many years at the place of his residence. He is survived by his widow and two sons.

DR. G. D. CARTER, of Anthony, who for several years was associated with the Homan Sanatorium, suffered a stroke of apoplexy in March. Dr. Carter seems ot be making satisfactory progress in his convalescence.

DR. W. S. DEPREE was instantly killed March 24, when a small truck in which he was riding collided with a Santa Fe train. His older son, a student at the Texas School of Mines, was also instantly killed in the same accident. Dr. Dupree has practiced medicine in Mexico and at several points in the southwest. He was 48 years of age, and a graduate of Tulane Medical School. Some months ago the doctor decided to retire from active practice of medicine and to ranch in the upper valley. One young son and a widow survive the physician.

DR. O. E. BROWN, of Tucumcari, was in El Paso April 3, on business.

DR. G. WERLEY spent some time in Artesia, New Mexico, in March on a consultation.

DR. HARRY LEIGH presented a paper before the Grant County Medical Society, at Ft. Bayard, March 30, on "Acute Non-Diphtheric Laryngeal Obstruction."

DR. F. J. DUNN, M.D., Ph.D., a graduate of Vienna (1904, 1911), has joined Dr. Waite's laboratory service. Dr. Dunn was clinical patholog'st of the Foreign Legation, Shanghai from 1924 to 1927. Blood pathology has been a specialty with Dr. Dunn. At present he is classifying and listing the material from some five hundred autopsies of the El Paso Pathological Society.

DR. J. H. RINEHART, a graduate of the Kansas Medical School, has recently located here in general practice. He has opened an office at 520 Mills Building.

DR. W. W. WAITE announces an extension of his pathological service by the addition of Dr. Dunn. Better facilities for tissue work have been added by acquiring new space and new equipment.

EL PASO HEALTH DEPARTMENT

Measles has taken a high place in El Paso contagions as a cause of death, directly and individualy, already this year. A similar epidemic in the winter of 1921-22 resulted in some 65 deaths directly due to measles. The remote effects of the city epidemic was especially felt with the onset of hot weather. Since measles epidemics repeat themselves a similar effect may be safely anticipated from the present epidemic. During February, 430 cases were reported ot the Health Department and already 18 deaths have been reported. That means a four per cent mortality. Owing to difficulties in getting the foreign population to report or seek help, this figure of death percentage is probably very high. On March first, 196 cases were still in quarantine.

A total of 110 cases of scarlet fever were reported during February with 89 still in quarantine the first of March.

BIRTHS FOR THE MONTH OF JANUARY, 1928.

	Male	Female	Total
White	36	40	76
Mexican	82	85	167
Black	1	1	1
Others	1	0	1
Total	120	126	246

DEATHS FOR THE MONTH OF JANUARY, 1928.

	Male	Female	Total
White	35	18	35
Mexican	54	42	96
Black	1	1	2
Others	1	0	1
Total	91	61	152

THE HEALTH DEPARTMENT reports the following births and deaths for February:

BIRTHS FOR MONTH OF FEBRUARY, 1928

	Male	Female	Total
White	31	33	64
Mexican	83	80	163
Colored	2	0	2
Others	2	2	4
Total	118	115	233

DEATHS FOR MONTH OF FEBRUARY, 1928

	Male	Female	Total
White	34	30	64
Mexican	46	57	103
Colored	4	1	5
Others	1	0	1
Total	85	88	173

The measles epidemic created a serious situation in the month of March. On this account, together with quite a large amount of la grippe, the total deaths amounted to 230 which is the largest mortality in over five years. Forty-two deaths alone were reported from measles. On April 1, there were still 157 cases of measles in quarantine, against 195 the first of March; 702 cases were reported in March against 430 in February; and also 42 against 16 deaths from measles. Sixty-three cases of mumps were on hand April 1, 77 cases of scarlet fever and 28 cases of chicken pox. No deaths from scarlet fever occurred in March.

ARIZONA AND NEW MEXICO NEWS

DR. W. V. WHITMORE, of Tucson, Ariz., has been given a Community Service citation for his service to the state university in its early days, when it was laying its foundation for its present greatness. Dr. Whitmore has served several times on the Board of Regents of the University.

THE ARIZONA STATE BOARD OF HEALTH will hold a public health and sanitary conference on April 17 and 18, at the University of Arizona, at which leading public health officials of the southwest will discuss various phases of public health.

SMALLPOX IN ARIZONA—The situation with regard to smallpox in Arizona has been gotten under control by the activity of the various health officials. Under the state law, vaccination cannot be made compulsory, but with the cooperation of the school officials and physicians, free vaccination was offered in almost every county and the general acceptance of this has enabled control of the contagion to be secured. Along the border, this was helped by the Mexican authorities who would allow no one to cross the line into Mexico unless they could show proof of successful vaccination. Several schools were closed in Cochise county and elsewhere. In Douglas, more than two thousand people were vaccinated in one day. In Mesa (Mar-

icopa county), free vaccination was given by Dr. R. F. Palmer to the school children.

DR. H. I. McNEILL, health officer of Mesa, has been ill for several weeks and Dr. F. W. BROWN has been serving in his stead.

DR. J. H. WOOLEY, formerly connected with the Nacozari Hospital, Nacozari, Mexico, is now a resident of Tucson, Ariz.

DR. GEORGE M. DUNNE, of Douglas, Ariz., has resigned from the staff of hte Copper Queen, to take effect May 1st.

DR. S. L. BURTON, of Albuquerque, N.M., has created comment in his community by his criticism of the habit of the New Mexico metropolis of advertising itself as a health center, to the overshadowing of the other advantages of that city.

DR., and MRS. W. A. GEKLER have returned from New Orleans, where they attended the meeting of the College of Physicians, afterwards visiting in Baton Rouge, La., the former home of Mrs. Gekler.

DR. VERNON KENNEDY, of Phoenix, Ariz., has returned to his work in association with Dr. Geo. Goodr'ch. Dr. Kennedy went to the coast several months ago, after recovering from his operation for ruptured gastric ulcer. He has been doing special work in urology under Dr. MacGowan for several months.

DR. JOHN E. BACON, of Miami, Ariz., was a visitor in Phoenix on April 2nd, when the Cubs and Pirates played their exhibition game.

VACCINATION AGAINST TUBERCULOSIS:—Dr. William H. Park, Director, Bureau of Laboratories, Department of Health, New York City, reports in Child Health Bulletin for March, gives a preliminary report on their initial work with the Calmette vaccine against tuberculosis in infants. Two groups of babies were taken from tuberculous families and kept under identical conditions. Fifty babies were given the treatment with about twice as many as controls. Of the fifty treated none developed tuberculosis, though four died from other causes. In the control group seven per cent have already died from tuberculosis. The vaccination apparently is harmless and the results are encouraging. Dr. Park thinks they are justified in making more extensive tests. (Weekly Bulletin of New Mexico Bureau of Health).

NEW MEXICO STATE HEALTH LABORATORY:-During the year 1927, the State Public Health Laboratory, in charge of Miss A. Greenfield, made a total of 7,310 examinations (Weekly Bulletin, March 27). Among the principal items were 1090 cultures for diphtheria, 1315 stool examinations for typhoid, 1799 blood tests for syphillis, 1057 specimens of water. The cost of the laboratory to the state was about $7,000. During the year the laboratory began the examinations for Malta fever, and this will be a routine procedure during 1928, whenever the specimens sent are suitable.

MEASLES IN INSTITUTIONS (Dr. E. S. Godfrey, Jr.):—In The Journal of Preventive Medicine for January, 1928, Dr. Edward S. Godfrey, Jr., Director, Division of Communicable Diseases, New York Department of Health, presents two studies on measles, Part II being devoted to report on the use of convalescent serum in the years 1923-24. His experience in the use of this serum was not highly encouraging, and his opinion is that "convalescent serum will favorably influence the mortality if administered during the

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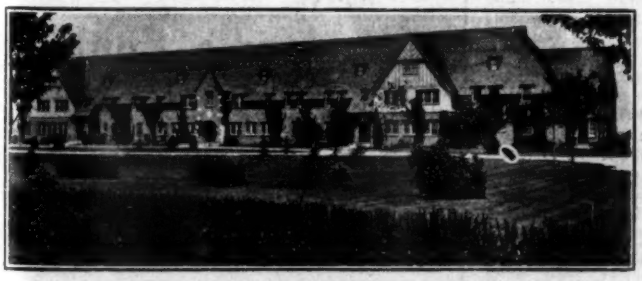

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Medical Director

incubation period, but that it is inadequate under exceptionally adverse conditions, at least in the dosage available in our experience." Dr. Godfrey writes in "The Nation's Health" on the same subject, December, 1927, issue.

Dr. Godfrey will be recalled by his many friends in the southwest, as the first, last and (as yet) only full time state superintendent of health for Arizona, serving in this capacity during the years immediately preceding statehood.

DR. W. W. HORST, of Globe, Ariz., announces his removal to Wilmington, Calif., where he will be engaged in practice in the future. His office will be at 802 Evalon Blvd., Wilmington, Calif.

DR. JAMES R. SCOTT, one time health officer of Bernalillo County, New Mexico, and lately city health officer of Berkeley, Calif., has returned to his old position in Albuquerque, where he is being warmly welcomed by his host of friends in that state. He returns to his old post with his usual enthusiasm. It may not have been due entirely to Dr. Scott's services in that city, but it is worth recording that, in 1926, Berkeley had the lowest infant mortality of any city its size in the birth registration area.

CHICAGO'S GREATEST RADIOLOGICAL CONVENTION

The Radiological Society of North America will hold its 14th Annual Convention in Chicago, December 3rd to 7th, inclusive, 1928. The Drake Hotel, Lake Shore Drive and North Michigan Avenue has been selected as the headquarters. We are assured of ample accommodations and exceptionally reasonable rates and of the best and most efficient service.

Make your plans for this year include Chicago's greatest Radiological Convention. Every physician who is interested in this branch of diagnosis and therapy is welcome.

There are no registration fees, no additional expense. Plans are under way now to secure reduced transportation rates.

The Ladies' Local Reception Committee is making plans for the entertainment of all visiting ladies. These plans include theater parties, luncheons, shopping tours and sight-seeing trips, with generous hospitality extended to all visitors.

Much attention is being given to arranging for scientific and commercial exhibits. These exhibits will afford a post graduate course of instruction in nearly every branch of medical science. Clinics covering Radiological problems as well as other branches of medicine will be given every day during the session. We are assured by the progarm committee of an instructive and interesting scientific session and a program upon which will appear representative men from all sections of this country and Europe.

Start to make your plans to attend now. This means you. Many papers on General Diagnosis and Therapy will be read and discussed during the Scientific Session.

Bring the wife and family to Chicago, the hub of the United States, with theaters, parks, boulevards and shopping districts second to none.

The location of our headquarters at the Drake Hotel will be found especially convenient. Therefore, make your plans to attend this meeting now. You cannot afford to miss this fourteenth annual session of the Radiological Society in Chicago.

Reservations should be made early. Communicate with Chairman of Hotels and Lodgings committee, T. J. Ronayne, M. D., West Suburban Hospital, Chicago, Illinois, or direct with Drake Hotel, Chicago Ill.

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AMERICAN MEDICAL EDITORS' ASSOCIATION

With the death of the last President, Dr. Henry O. Marcy, the American Medical Editors' Association became inactive and remained so for five years. At the time of Dr. Marcy's death, one hundred and seventeen editors were on the roster.

Early in January, 1928, the present President, Dr. H. Lyons Hunt, called a meeting of a few of the New York editors to discuss the advisability of reviving the Association. The vote of those present was unanimous that this should be done.

That a need was felt for the Organization, can best be demonstrated by the fact that not only practically all members of the old Association came in, but over one hundred new members made application, so that today the American Medical Editors' Association is stronger and more powerful than it has been in its entire history.

As the organization swung into power, numerous meetings were held, officers elected and committees appointed to study and promulgate a tentative platform representative of the American Medical Editor's Association. Just how the entire Association will stand on these subjects, will largely depend on the information gleaned on each by the committees appointed.

That the Association is functioning with enormous activity, is shown by the fact that committees have been appointed to study and advocate a stand for the Association on the following subjects: "MEDICAL JOURNAL ENDOWMENT FUND." (This is a rather new idea but there seems no reason why medical schools and hospitals should receive endowments while medical journals and those who run them, often at considerable sacrifice, should not look to share in a central endowment fund. Certainly the medical journals constitute one of the greatest forms of medical instruction and teaching in the country and through the profession are of untold value to the health of the nation.)

Committees have been formed to study ways and means of "Standardizing Medical Education" and "Standardizing Medical Licensing Examinations." "Bringing About International Medical Reciprocity." (Four committees, one in Canada, one in the states, one in England and one in France have already been appointed to study this subject.)

Committees to study Workman's Compensation," "Pay Clinics," "Commercial Laboratories," "Open Hospitals." "Medical Compensation," "Drug Store Prescribing," "Pharmacy and Therepeutic Products." "Electrotherapeutic Apparatus," "Prohibition."

Committees on "Legislation," "Advertising," "Publicity," "Policy," "Public Health," "Medical Economics" and so on, all studying certain questions and working out solutions for the problems involved, for the advancement and elevation of the medical profession and of medical journalism.

April has been designated as "Industrial Month" by the Abbott Laboratories. During this period a survey of the principal industries in various sections of the country will be made to determine to what extent the following Abbott and D.R.L. items are being used in industrial medicine:

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A special booklet, "The Industrial Medicine Chest," has been prepared by the Abbott Laboratories, North Chicago, Ill., for distribution to physicians interested in industrial medicine.

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SITUATION WANTED

Physician would like to share hours and office expenses with other physician, Address, "Physician," Southwestern Medicine.

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